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Opposite

OBSERVATIONS
ON THE
CLIMATE
IN DIFFERENT PARTS OF AMERICA,
COMPARED WITH THE
*CLIMATE IN CORRESPONDING PARTS OF THE
OTHER CONTINENT.*
TO WHICH ARE ADDED,
REMARKS ON THE DIFFERENT
COMPLEXIONS OF THE HUMAN RACE;
WITH SOME ACCOUNT OF THE
ABORIGINES OF AMERICA.

BEING
AN INTRODUCTORY DISCOURSE
TO THE
HISTORY OF NORTH-CAROLINA.

BY
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BE it remembered, that on the seventeenth day of June, in the thirty-fifth year of the Independence of the United States of America, Thomas and James Swords, of the said district, have deposited in this office the title of a book, the right whereof they claim as proprietors, in the words following, viz. "Observations on the Climate in different Parts of America, compared with the Climate in corresponding Parts of the other Continent. To which are added, Remarks on the different Complexions of the Human Race; with some Account of the Aborigines of America. Being an Introductory Discourse to the History of North-Carolina. By Hugh Williamson, M. D. LL. D. Member of the Holland Society of Sciences, of the Society of Arts and Sciences of Utrecht, of the American Philosophical Society, &c." In conformity to the Act of the Congress of the United States, entitled, "An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts, and Books to the Authors and Proprietors of such Copies, during the Time therein mentioned." And also to an Act, entitled, "An Act, supplementary to an Act, entitled, 'An Act for the Encouragement of Learning, by securing the Copies of Maps, Charts, and Books to the Authors and Proprietors of such Copies, during the Times therein mentioned, and extending the Benefits thereof to the Arts of Designing, Engraving, and Etching Historical and other Prints."

CHARLES CLINTON,
Clerk of the District of New-York.

PREFACE.

IT can hardly appear strange that a citizen of the United States should inquire, with some degree of attention, into the foundation of certain opinions which have been advanced by writers in Europe, unfavourable to the climate and animal productions in America; that he should inquire whether it be true, that man and beast, in all cases, degenerate in this portion of the globe. It is hoped, that in the following discourse, the reader will find sufficient reason to question the correctness of that position.

While we were considering the aborigines of America, and the changes to which men and climates submit, it became necessary, towards a perfect investigation of the subject, to turn our attention to the several climates of the other continent, and its inhabitants; to view them as they now appear, and as they appeared two or three thousand years ago. In this general view of the subject, certain phenomena presented themselves that involved

questions which seem to be essentially connected with good morals. A detailed solution of those questions has not been attempted; but they seemed to demand some notice. Modern historians and philosophers are amusing themselves and their readers every day with criticisms upon and objections to the Mosaic history of man. All men are equally bound to understand the foundation of moral obligation. It is equally their duty to know the truth; and they are equally interested in the love and practice of virtue. If men who do not believe in the truth of revelation, may be excused for turning aside to persuade other men to adopt their useless unbelief, surely a writer may be excused for stating some reasons for his belief, whose hopes of salvation are rested upon that record. If arguments favourable to virtue, and conducive to human happiness, can be deduced from civil or natural history, they are equally the property of every man who travels in those fields, and they may be classed among the most desirable fruits of study. However this may be, the reader will not have reason to complain that the following discourse is burdened with many observations that are not intimately connected with the subject, when we are comparing the inhabitants of America with those of the other continent. Some of the positions that have been stated, in opposition to the conjectures or

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gratuitous and bold assertions of certain modern philosophers, are capable of demonstration, or other the most satisfactory proof; but I have attempted to give little else than sketches or outlines of a few arguments; and those are chiefly thrown into marginal notes, lest the reader's patience should be exhausted.

It will be observed, that sundry facts are stated, in the following discourse, for which I have not given the authorities. Some of those facts were noted long since, for the help of my own memory. They were taken, in every case, from respectable sources, whose veracity I could not question. But in several instances the names were omitted and are now forgotten. The late Drs. Hahn and Luchman, while I studied at Utrecht under their care, were pleased to show me observations they had made; one of them “*de calore;*” the other “*de varietibus generis humani.*” I am not informed whether any thing, on these subjects, has been published in their names.

I had the misfortune to lose papers, during the revolutionary war, that had been the fruit of some reading; they fell into the hands of the enemy. Although excuses cannot be admitted for a crude performance, this work, as I conceive, would have been more correct, if the manuscripts referred to had been preserved. Little of my time since that

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period has been devoted to studies of this kind. Twelve or fourteen years service in the Congress, or other employments under the state, left little time for other attentions, to a man who was always desirous that his want of talents might be compensated by greater diligence in public service.

The publication of this discourse and of the history to which it refers, has been suspended many years, with the hope of getting from the Western Country, according to the promise of sundry correspondents, some farther account of Indian antiquities, and obtaining conclusive materials towards the history of the original inhabitants. But people who live near the ancient monuments, and see them every day, are less disposed than we could wish to dig in quest of antiquities.

New-York, June 17, 1811.

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ERRATA.

Page 25, line 15, for "paticles," read particles.
 158 and 139, where the word "Roma," occurs, read Rama.
 159, line 2, for "Romasitou," read Ramasitou.
 3, for "derive," read desire.

OBSERVATIONS, &c.

WHEN the soil, climate, and animal productions of America are compared with those of the other continent, they suffer greatly by the unfavourable light in which they are commonly placed. America is described by writers of great celebrity, as a world lately risen from the ocean; as a country, in which the frigid temperature of the atmosphere seems to be impressed upon its animal productions; as a country, in which some vice of the climate, or some combination of elements, prevents the expansion of animated nature, and causes man and beast to degenerate;* a country, for which a new and inferior race of men has been created.† Before we enter upon the history of North-Carolina, it may not be improper

* Buffon, Reynolds, and Robertson.

† Kames.

to review the opinions, that have been advanced, concerning the supposed defects of this continent. Whatever our situation, whatever our connections may be in life; whether we are patriots or parents, we cannot fail, to interest ourselves greatly, in the fortunes of those who may come after us. And if it should appear that the supposed vices of our soil and climate do not exist; if it should appear that America is, at least, equal to any other part of the world, we may conclude, without hesitation, that it must be our own fault, or the fault of our descendants, if they should sink below their ancestors in virtue, or any desirable quality of body or mind.

The character, of the American climate, has chiefly been taken from observations made in the colonies, that are now the United States; for few observations on the climate have been made, in those extensive provinces which are under the dominion of Spain or Portugal. That we may form a better estimate of the climate, in different parts of this great continent, it will be proper for us to consider the parts that are best known, and compare the present state of the

climate in those parts, with observations that were made fifty or sixty years ago. If it shall appear that the climate in the United States of America is materially altered in the memory of man, it will then be proper to consider what has been the cause of that alteration; whether that cause is capable of producing great effects, and how long it may be expected to operate. It will also be proper to inquire, what was the prevailing temperature of the climate, in different parts of the old continent, above two thousand years ago, before it had been cultivated as at present. When we have finished this review, we shall be prepared to determine, whether there be any essential frigidity in the American atmosphere.

The medium temperature of our winters, in the Northern States of America, has been marked at twenty-eight degrees* below the temperature of corresponding latitudes in Europe; and the medium temperature of our summers, at eight degrees above the temperature of similar latitudes. Hasty conclusions have been drawn from observations

* Fahrenheit's thermometer.

of this kind, without considering the climate in other parts of America; the changes that cultivation has produced in the climates of the old continent, or the changes which the same cause has already produced in some parts of America.

Although the extremes of heat are found near the equator, and the extremes of cold near the poles, it is well known that the temperature of different places is not uniformly hot or cold, according to their several latitudes. The temperature of every place is greatly affected by its position; as it is high or low, as it respects mountains or plains, sea or dry land. It is also affected by the prevailing winds. The heat of the sun is the general cause of wind; but the particular direction of the wind, in different countries, depends on a combination of many circumstances. If the sun was to remain a considerable time over any given part of the earth, that part, being greatly heated, would heat the atmosphere near the surface; would cause it to expand, to become light, and to rise to the upper regions; from which it would escape in all directions. The cold air being more heavy, would im-

mediately rush in, to supply the place of that which had passed off. In that case there would be a constant wind from all directions, east, west, north and south, blowing towards the heated part. But as the sun moves in his diurnal course, or seems to move from east to west, near the equator, and heats the earth in his progress, the heated air must rise and escape from the sun's tract, and the colder air must rush in from the north or south. The sun must also be followed by a current of air from the east; but there can be no current from the west, near the equator; because the sun, who moves, or seems to move, much faster than the wind, meets the western column of the atmosphere, and gives it an opposite direction. As the eastern column follows the sun, and another column from the north, in northern latitudes, presses to the southward, a compound course is formed by those different winds, and a regular trade wind is formed by those winds, which in northern latitudes is east northerly, and in southern latitudes is east southerly. But those north-east and south-east winds meeting near the sun's path, the trade wind, in that parallel, is nearly

due east. Such is the cause, and the course of those uniform and regular winds that prevail in warm climates. Those winds, not being interrupted by mountains or high lands, usually extend to the twenty-seventh or twenty-eighth degree of latitude, north or south, according as the sun may have northern or southern declination.* The same cause must ever produce the same effects; whence it follows that if the surface of the globe, in low latitudes, was all covered with water, or if it was solid earth, plain and uniform, we might determine with some degree of certainty what would be the direction of the wind at any given time and place through the year. From the great regularity that appears in trade winds, we are naturally induced to look for some order in the general course of winds in high latitudes. The atmosphere is known to have a considerable weight and tendency, like water, and every other fluid, to preserve its level or equilibrium. The air under the sun's path, being heated, becomes specifically lighter, and escapes to a colder region,

* In the South-Sea they seldom extend beyond the twentieth degree.

Its place, in northern latitudes, is supplied by a column of air from the north-east; but the place of that column is also to be supplied; for a constant equilibrium must be preserved. The heated air, from the sun's path, rising to the upper regions, escapes to the northward. In a short time it loses its heat, and moves to the eastward, to supply the place of that column which had lately formed the trade wind, by passing to the south-westward: thus in high latitudes, the prevailing winds should come from the westward, because in low latitudes they come from the eastward. That is to say, the trade winds should be easterly, and in higher latitudes the winds should be westerly.* In the Pacific Ocean, above the twenty-eighth degree of latitude, it is said that the wind blows steadily from the west.

There are few places, in the habitable world, where we should expect to find such a prevalence of north-west winds, as in the United States of America, near the Atlantic Ocean. Our coast is washed by the Gulf stream; and the waters of that stream, lately

* See proofs and explanations A

heated between the tropics, are warmer by fifteen or twenty degrees, than the waters through which they pass, in their progress to the north-eastward. The incumbent air, being heated by this warm water, passes off, and the colder air, from the northward, occupies its place. There is a great ridge, or sundry ridges of mountains, on the opposite side of the Atlantic States, that run nearly in a north-east direction, parallel to the Gulf stream. The air upon those mountains, as upon every other mountain, is cold. The direct course from the Apelachian mountains to the Gulf stream, is nearly south-east. Here then we find a particular cause for the prevalence of westerly winds, or rather of north-westerly winds, in some parts of the United States, in addition to the general cause before mentioned. The air to the south-eastward is heated by the Gulf stream; it is cooled to the north-westward by the mountains; and the intermediate surface, while it is covered by trees, can have little effect in warming the atmosphere. It is doubtless understood, that in every contest between cold and warm air, that which is cold, being heaviest, always prevails. As the north-west

winds, considering their origin, are supposed to be cold, we should expect, during the winter, a greater degree of cold near the eastern coast of the United States, than is commonly felt in corresponding latitudes in other countries. But the character of America is not to be taken from this particular tract; neither are we to believe that the superior degree of cold, in this very tract, will be permanent. It is well known, that in the Atlantic States, the cold of our winters is greatly moderated. As the surface of the country is cleared, a greater quantity of heat is reflected; the air becomes warmer, and the north-west winds are checked in their progress. It is generally admitted, that in Massachusetts and New-Hampshire, the quantity of snow that fell, during the winter, fifty years ago, was more than double of what has fallen, in any winter, for several years past. The river Delaware, in the latitude of forty degrees, used to be frozen by the middle of November; but of late it has seldom been frozen before Christmas; and there are winters in which it is never frozen across. As the westerly winds decrease, the easterly winds prevail. They have become more frequent,

and they extend to a greater distance across the country than formerly. The face of cultivated lands, in the summer season, is frequently warmer than the surface of the ocean, in the same latitude: hence it is that easterly winds are observed to increase. It is well known, that ships from Europe make their passage now in less time, by one third, than they required about fifty years ago; for the north-westerly winds, that formerly prevailed on the coast, frequently kept off the shipping for several weeks. They are now favoured by easterly winds, which have increased so much of late, that they are like to be our prevailing winds during the summer, in the Atlantic States—a circumstance that must increase the moisture of our atmosphere, and will be very acceptable to the husbandman.*

* It is a remarkable circumstance, that though we have near twice as much rain in the United States of America as falls, at a medium, in most parts of Europe, we suffer occasionally by drought. Our westerly winds are exceedingly dry; but these winds prevail in summer, and in a short time carry off the moisture, so that frequent showers are necessary to the production of good crops. When easterly winds shall prevail, there will be much less occasion for rain, because the moist atmosphere, from the surface of the ocean, will not speedily dry the soil.

I am aware that the cause I have stated, for the former intensity of the north-west winds, is contrary to the received opinion. It is commonly alleged, that we are indebted to the great lakes for the coldest of those winds; an opinion that is not supported by any principles of philosophy. The lakes, in general, do not freeze during the winter; hence it follows, that the water in those lakes, being temperate, would moderate the severity of cold winds, rather than increase it. We know that winds from the ocean or from any great body of water that does not contain islands of ice, are seldom very cold. According to this observation, it is found that the north-west winds, between the great lakes and the mountains, are not so cold as they are between those mountains and the Atlantic Ocean, in the same degree of latitude. It is not alleged that a current of air never crosses the Apelachian mountains, but the few currents that pass can never be very strong, considering the height of the mountains.* If the north-west winds came to us

* The general height of the Apelachian mountains is found to be near eleven hundred yards. In some parts they rise three quarters of a mile above the common surface of

from the other side of the mountains, there is little reason why we should not have them as frequent as formerly, nor why they should be of shorter continuance. But it is known that they are much less frequent than formerly,* and that their usual continuance is much shorter. One of the severest north-westers I ever felt was at sea, about the thirty-ninth degree of latitude, a few miles from the coast. It demolished every fence that was near the shore; but the severity of the wind was not remarkable at the distance of forty miles inland. It was certainly caused by the difference of temperature between the air above the Gulf stream, and the air above the coast that was covered with snow.

We are not to conclude from observations made in the Atlantic States, that the winter's

the earth, but in many places they do not exceed half a mile. I was informed by a correct observer, that near the river Holsten, in the State of Tennessee, he saw clouds from the eastward, that seemed to have crossed the mountains, then in sight. He was surprized at the circumstance, and one of the oldest settlers, who chanced to be present, assured him that he had never seen the like before. They presumed that there must be a severe storm on the coast of Carolina, and such was the case, as he afterwards discovered.

* See proofs and explanations A.

cold in America is generally greater than the degree of cold that prevails on the other continent, in like circumstances. We have seen the reason why westerly winds should prevail, in high latitudes, and we have shown that they do thus prevail. If those winds come from mountains or high lands, they must be cold; if they come from the sea, they must be temperate. On the western coast of America, near the Pacific Ocean, the winters are temperate and short; the position of land and sea in those regions, being the reverse of the position upon the Atlantic coast. The westerly winds, on that side of the continent, come from the ocean. But upon the continent of Asia, opposite to America, the winters, in the same latitude, are much more severe. The rivers freeze in China, in the latitude of Rome; for their westerly winds come from a high uncultivated tract of land. Nor is it probable that Pekin, which is nearly in the latitude of Philadelphia, will ever be relieved from the chilling effects of north-westerly winds; for the rude inhabitants of Tartary have little disposition to cultivate the soil. Captain Cooke, the celebrated navigator, observed

that vegetation at Nootka Sound, in the latitude of forty-nine degrees, was in great forwardness in April. Captain Magee, of Boston, who passed a winter at Nootka Sound, informed the writer, that he saw little snow in that region. The spring appeared on the coast, as he alleged, about thirty days sooner than it appears in Massachusetts. We are also told by Meares, in his Voyages from China to the north-west coast of America, that "the western side of America is a mild and moderate climate;" that "the winters generally set in with hard gales from the south-east." There is seldom any frost on the coast till January, "when it is so slight as rarely to prevent the inhabitants from navigating the Sound in their canoes."

On the western side of the Apalachian mountain, where cultivation is hardly begun, the winters are much more temperate than near the Atlantic Ocean. This difference is attested by numerous settlers; and it has been observed that paroquets winter on the river Scito, in latitude thirty-nine. But I have not heard of their wintering in any part of the Atlantic States, to the northward of thirty-six; viz. in the Great Dismal of Tyrrel county, in

North-Carolina. It has also been observed, that tender plants thrive better in the western country, three or four degrees farther north, than in the Atlantic States.* De la Perouse, on the western coast of North-America, in the latitude of 58. 37. measured pine trees that were six feet in diameter and one hundred feet high. But that very officer had formerly observed, that trees of the same species, on the other side of the continent, near the Prince of Wales' Fort, in Hudson's Bay, in the same degree of latitude, "are scarcely big enough for a studding-sail boom." This single fact may be stated as a clear and sufficient proof, that the climate on the western side of America is much more temperate than it is on the eastern side. It serves also to prove, that no estimate should be made of the American climate, from the past or present temperature of our winters, in some of the Atlantic States.

It has generally been supposed that the cold in Terra del Fuego, the most southern part of America, is intolerable during the winter; but we have no good reason to be-

* Loskeil's History of the Moravian Missions.

lieve, that it exceeds the degree of cold that prevails in the northern parts of the old continent, in the same degree of latitude. The contrary is very probable. It is known that land admits of more heat than water, and its temperature is more easily affected. From this it follows that the summers, in high latitudes, in South-America, are much colder than the summers in corresponding northern latitudes in the old continent; for America being very narrow and mountainous in those regions, cannot be much heated by the summer's sun; and the adjacent seas are tempered by floating ice; hence the land in Terra del Fuego, is covered with snow through the summer. But the superior cold of their winters is not to be inferred from this circumstance; for it is ascertained by observations made in the Falkland islands, during the three winter months, that the cold in those islands does not exceed the winter's cold in London, which is nearly in the same latitude.* As there is little dry land in that vicinity, or solid plain surface, by which the air may be heated, it follows, that the

* Dr. J. R. Forster.

medium summer heat in Falkland islands, is not more than twenty degrees above the winter's cold. The effects of reflected heat, by this single fact, are placed in a striking point of view. In the province of Chili, in South-America, the winters are warmer than in the northern parts of Spain.*

From this survey of the different parts of America, we are induced to suspect those philosophers of partiality or prejudice, who mention the coldness of our climate as a proof that America has lately emerged from the ocean; and who state this allegation in support of another conjecture, viz. that animal nature must degenerate here. The old continent is not supposed to have risen, of late, from the ocean, but we can mark the period when the winters in Asia and Europe were as cold, perhaps colder, than they now are in corresponding latitudes in America. The inhabitants of those regions must be indebted to cultivation alone, for the present temperature of their climate. As the number of the human race increases, this globe, by a fortunate change of temperature, affords them

* De Ulloa.

a more comfortable residence. The winters must have been very cold, seventeen hundred years ago, in Italy, else Juvenal could not have mentioned the necessity of cutting the ice, on the Tiber, in order to come at the water.* Horace could not have described the streets of Rome, as full of ice and snow; nor could Virgil, with any propriety, have recommended great attention to young sheep, lest the cold should destroy them.

In the present age, ice is not found on the Tiber. Cattle are not injured by cold in that part of Italy. Neither does the Euxine freeze, nor wine, in its vicinity, as formerly they did, when the Roman poet, in pathetic strains, lamented his banishment.† The northern parts of Spain, as Strobo tells us, were thinly inhabited, by reason of cold.

* *Hybernum fractâ glacie descendet in amnem,
Ter matutino Tiberi mergetur.*

Juv. Sat. vi. line 521.

“ *Glacies ne frigida lædat
Molle pecus.*”

Virg. Geo. lib. iii. l. 298

† *Ipse vides certe glacie concrescere Pontum
Ipse vides rigido stantia vino gelu.*

Ovid de Ponto, lib. iv. cl. 7

And we are told by Livy, that, for a month together, the ground was covered with snow, four feet deep, at a town near Barcelona.* Germany was so cold, about the same epoch, that it would neither produce apples, grapes, nor other fruit.† The forests in Thrace and Panonia, as we are told by the ancients, were covered with snow through the greater part of the year; and white bears were common in Thrace as now in Siberia. There was a considerable degree of cold eighteen hundred years ago in Palestine, where they have very little winter at present, and very little cold, towards the latter part of March.‡ If we look farther back, one thousand years, we shall find that snow and ice were familiar to the inhabitants of that country.§

I shall add but another fact, in proof, that the winter's cold is greatly moderated within

* Triginta dies obsidio fuit per quos raro unquam nix minor quatuor pedes alta jacuit.

Liv. lib. xxi. Bel. Pun.

† Germania frugiferum arborum impatiens. Tacitus.

‡ The servants and officers stood there, who had made a fire of coals, for it was cold. John xviii. 18.

§ He giveth snow like wool; he scattereth the hoar-frost like ashes; he casteth forth his ice like morsels: who can stand before his cold? Psalm cxlvii. 16, 17.

the temperate latitudes. It appears from the observation of travellers, compared with ancient historians, that though the number of lions is greatly decreased in Libya, they have increased vary much, within the last two thousand years, in Turkey and Persia. This increase cannot be accounted for, as I conceive, except by observing that regions, which formerly were too cold in winter to become the residence of lions, are now so much warmer as to be fitted to their constitutions.

Having alleged, that a climate, disagreeably cold, may become temperate and warm by cultivation alone; I shall attempt some explanation of the process, by which so great an effect may be produced, by a cause that is very simple.

The theory of heat, the subject of this inquiry, is confessedly involved in many difficulties; but our explanation will not be affected by the diversity of opinions which have been advanced on that head.

Does heat proceed directly from the sun, or is it generated, on this globe, by the light of the sun? Is heat or fire a distinct substance? Is there an igneous fluid that moves, like other fluids, by certain laws, penetrating

all other bodies, augmenting their size, and exciting the sensation of heat? Are we rather to believe, that heat is a simple modification of bodies, depending on the vibratory motion of their particles? The latter hypothesis seems to explain the most obvious phenomena of nature; but there are other phenomena, which cannot easily be explained, without having recourse to an igneous fluid; to a substance *sui generis*, that pervades all nature; a substance that may be active or inactive; that may affect the senses or become perfectly neutral, according as it is situated or combined. The light of the sun is confessedly the general cause of heat in our atmosphere. How does the sun occasion heat, it being at least probable, that heat does not come directly from the sun? This is a question of difficult solution. A clear, transparent, unclouded atmosphere, is not heated by the direct rays of the sun; for light passes through it without obstruction; and there is reason to believe that resistance is necessary to the excitation of heat. The rays of the sun, striking the surface of the earth, by which they are resisted, cause the surface to be heated, and the atmosphere is

heated by the surface of the earth. Hence it follows that the atmosphere can never be warmer than the surface of the earth, nor is it ever so warm, at a distance from the earth, as near its surface. At the distance of 5340 yards above the plain of the horizon, between the tropicks, the temperature of the atmosphere is constantly below the freezing point of water. The earth is heated by the sun, more or less, according to the quality or position of the surface. The more oblique the direction of the rays may be, in falling upon the surface of the earth, the smaller is the number that fall upon a given space, and they are the less capable of heating the surface; therefore the heat should be greatest near the equator, provided the surface of the earth be level in those regions. A dry surface receives more heat than one that is wet, and retains it longer. The sands of Nigritia are frequently heated by the sun to 140 degrees of Fahrenheit's thermometer. Dry roads and the dry surface of a field are often heated to a high degree. But a watery surface can never be made very warm by the sun; for evaporation is the necessary effect of heat, and the loss of heat is the ne-

cessary consequence of evaporation, part of the heat being carried off by the vapour. The generation of cold, or, to speak more correctly, the reduction of heat by evaporation, is a process that has long been understood, and is the foundation of daily operations. The epicure, who is no philosopher, cools his wine in a warm climate, by exposing a bottle to the wind, covered with a wet cloth. And the East Indian obtains ice at Benanes, in earthen pans, that have not been glazed, where the temperature of the atmosphere is never so low as the freezing point. The sun's rays falling upon wet land, or upon land covered with trees, cause evaporation, and the heat of the surface is reduced in proportion to the fluid that is evaporated, in a given time; for every particle of water that escapes, must be charged with a portion of heat; and the loss of heat is the same thing as the generation of cold.* From the cooling effects

* We are not perfectly correct when we speak of the generation of cold, for it is admitted that cold is a negative quality. It implies nothing else than the want of a certain degree of heat. There is not any body in nature without some heat. Ice itself contains a greater or less degree. The ice of water contains more heat than the ice of brandy, and that contains more than the ice of mercury.

of evaporation, upon the surface of the earth, it follows that cold winters are generally consequent upon wet autumns. The cold of winter is chiefly moderated by the heat of the earth; and much evaporation, in summer or autumn, cools the earth to a considerable depth. It appears, from experiments,* that land covered by trees, emits one third more vapour, than a surface of the same extent, covered with water. The vapours that arise from forests, are soon converted into rain, and that rain becomes the subject of future evaporation, by which the earth is further cooled. Hence it follows, that a country, in a state of nature, covered with trees, must be much colder than the same country when cleared. Little heat can be excited on the surface of a great forest; for in every part, where the sun can penetrate through the trees or bushes, it strikes a surface covered with stagnant water, or with vegetables highly saturated with water.

This cooling process affects every country more or less. The heat would be intolerable in low latitudes, if the process did not

* Dr. Hale's Experiments.

exist there, to a great degree. A perpetual verdure and thick foliage, within the tropical regions, tend greatly to moderate the heat, by copious evaporation. In sandy deserts, where the verdure is deficient, the heat becomes intense. In high latitudes, where the country is not mountainous, by exposing a smooth surface, without much timber, to the influence of the sun, the inhabitants may enjoy a temperate climate.

It has generally been alleged, that evaporation depends upon the attraction that exists between air and water, and that it is effected by the cohesion of the particles of air to the particles of water; for it is found that evaporation is greatly promoted by the help of a fresh breeze. This theory is plausible, but there is reason to believe, from various experiments, that evaporation chiefly depends on heat. Let the air be pumped from a glass receiver, and water will be observed to rise in the receiver, or the process of evaporation will go on more speedily, than in the common air, with an equal degree of heat. The pressure of stagnant air, in the latter case, seems to retard the vapour in rising. When it is alleged that evaporation depends on

heat, or upon the attraction that exists between fire and water, or upon the elasticity which the particles of water acquire from heat, I am not inattentive to the observation above stated, that evaporation is promoted by wind; for it is obvious that a free circulation of air is necessary to remove the vapour that is excited by heat. Hence it is that calm days are generally warm, for the vapour is not removed, and in such case, little cold is generated by evaporation. There are not any experiments from which it would appear that heat, like every other substance of which we have any knowledge, gravitates towards the centre; it rather seems to ascend, but like every other fluid, it endeavours to preserve its balance.* For this purpose it penetrates all bodies, either by ascending or descending, though it penetrates or passes through some bodies with more ease than others. It is strongly attracted by water, as we have just observed, but it will forsake the water, in order to preserve its own equilibrium. Bring a glass bottle of

* In this case I speak of heat as if it was a distinct fluid; for the healing cause in most cases seems to act by the laws of fluidity.

cold water into a warm chamber, and the heat near the bottle will penetrate the glass, that it may enter the colder water, and restore the balance of heat. In that case, the invisible vapour that was attached to the heat, not being capable of penetrating the glass, must remain on the surface of the bottle, where it is changed into visible drops of water. It has been observed, that heat does not appear to have any tendency towards the centre, like every material body of which we have any knowledge. On the contrary, it seems to act in direct opposition to the power of attraction. The tendency of heat is to cause repulsion between the constituent parts of a body, and that repulsion, by a great degree of heat, is such as to dissolve the continuity of the parts, and destroy the body. In solid bodies, where the parts cohere strongly, the effect of moderate heat is simply to enlarge the bulk. In fluid bodies, the external parts are separated by the repulsion of heat, and fly off. The more they are heated, the longer is the sphere of repulsion, or the greater is the distance at which the particles are retained from one another. Water, reduced to vapour,

soon loses part of its heat in the upper regions; in which case the particles approaching one another are formed into drops, and descend in rain. In the process of forming rain, the colder atmosphere receives heat from the vapour, and this addition to the heat of the atmosphere, in calm weather, is frequently perceived on the surface of the earth. Viewing the subject in this light, and regarding heat as the vehicle of vapour, we can readily account for the great loss of heat, or the great prevalence of cold, in a vast forest, where the heating cause is weak, and the process of evaporation copious and constant.

Heat, or light, the parent of heat, like every elastic fluid, is reflected by a smooth surface, but the quantity that is reflected depends much on the colour of the surface. White reflects more heat, and black reflects less, than any other colours. It is found that a smooth white surface reflects three fourths of the light or heat that falls upon it,* but a black surface transmits the greater

* Therefore the backs and sides of fire-places should be made of white stone, but never of black iron; for iron transmits the heat freely.

part. Bodies of different colours differ greatly from one another in the quality of transmitting heat, or the power of reflecting it. This is a fact that claims particular attention, and should be well understood, for we shall have occasion, once and again, to refer to this remarkable difference, when we consider the various complexions of the human race. The difference here alleged may be ascertained by experiments that are simple and satisfactory. Every man who has, at different times, worn black clothes and white, in a warm sun, has felt the difference. Lay a piece of black cloth and a piece of white cloth upon the snow, in the sun; the black cloth will be observed to sink into the snow much faster than the white; because the black transmits the heat, by which the snow is melted, but the white reflects the heat. It is not a good conductor. Expose two thermometers, equally graduated, to the rays of the sun; the bulb of one thermometer being black, the other white. The mercury will rise much sooner in the thermometer that has the black bulb; for the light or heat does not pass with so much ease through the white surface of the other thermometer.

Although the greatest quantity of heat is reflected by a white surface, it is reflected in certain proportions by bodies of every other colour; but the smoother and drier the surface may be, the more heat will be reflected by it. Hence it is, that cold climates are greatly improved by cultivation. When a considerable part of our mountains shall be subjected to the plow, and the Atlantic states shall be fully peopled, I deem it probable that cotton will be produced in Pennsylvania, and oranges in Maryland. It is not to be expected that the American winter, above the latitude of fifty degrees, will ever become more temperate than winters in corresponding latitudes of the other continent, for they are circumstanced, in many parts, nearly alike; but the temperature of the American summer, in low latitudes, will certainly become more desirable.

The aborigines of America have not suffered less than the climate, under the censure of historians who trusted to the report of inaccurate and superficial observers. The American Indians, as they allege, are a new race of men. It is conceived, by an author

of great erudition,* that “ America has not
“ been peopled from any part of the known
“ world. The external appearance of the
“ inhabitants make this conjecture approach
“ to a certainty, as they are evidently dif-
“ ferent in appearance from any other known
“ people. There is not a single hair on the
“ body of any American; no appearance of
“ beard. Another distinguishing mark is
“ their copper-colour, uniformly the same
“ in all climates, hot and cold, and differing
“ from the colour of every other nation.”—
We shall presently show good reason for
asserting that the American Indians, or many
of them, are descended from the Tartars of
Asia, or from the more southern Asiatics; but
the hypothesis that refers to different
races of men, seems to claim particular at-
tention. If different races of men should
be found upon the old continent, as some
philosophers have alleged, we could not be
surprised to find an additional race in Amer-
ica; that circumstance could not be more
remarkable than the discovery of a new bird
or quadruped. But history and philosophy

* Kames's Sketches, vol. ii. b. 2. sk. 12.

refuse their assent to the original hypothesis. They teach us that the earth has been peopled by a single race of men.

Before we attend to the colour and similarity of the savage men of America, we shall take a general view of the old continent and its inhabitants. In the different climates of Africa, Asia, and Europe, there are men of all the different shades or colours from white to black; there are hardly two nations perfectly alike; short, middle-sized, and tall; white, brown, tawny, red, olive, copper-coloured, swarthy, and black; features very coarse or very fine; hair brown, fair, red, and black, long, curled, frizled, or woolly: we find innumerable combinations of these different shapes and colours, according to the different degrees of latitude, temperature, or civilization. How many races shall we count? The number five has been taken; but fifty might be taken for the same reason. They differ in some particulars. The five races of men on the old continent, have been distinguished in the following manner, according to the climates they inhabit.*

* Buffon.

1. The Laplanders, Danish, Swedish, and Russian; the inhabitants of Greenland, Kamtschatka, and the Samoid Tartars, from latitude sixty degrees north to the pole; their colour, deep brown, almost black; shape short, large head, flat nose, hollow small eyes, high cheek bones, wide mouth, thick lips.

2. The Tartars from latitude fifty to sixty. To this race is joined the Chinese and Japanese. Their colour, olive, tawny, white; shape middle size, broad face, flat nose, small eyes, high cheek bones, narrow chin, black hair, large thighs, little beard.

3. The inhabitants of Europe, Georgia, Circassia, Asia Minor, and the northern parts of Africa, to the southward of fifty degrees. Their colour, white; shape, middle size, rather tall; eyes blue, hazel or black; hair flaxen, brown, red, black.

4. The southern Asiatics inhabiting the peninsula of India and its islands; to which belong the Persians and Arabians. Their colour, olive, black; shape, slender, well formed; Roman nose.

5. The inhabitants of the southern parts of Africa, extending from latitude eighteen

north to eighteen south, except the Ethiopians and Abyssians. Their colour, black; shape, middle size; flat nose, thick lips, woolly hair.

Among the nations who are thus distinguished, according to the latitudes they inhabit, there may be found strong characteristic distinctions. The short, with coarse features, are not equally short, nor ill favoured. Among the blacks there are coarse and small features; strong and slender forms; deep black, and innumerable varieties of lighter shades, until they become swarthy: from flat noses and thick lips, to high noses and thin lips; from short frizzled wool, to long straight hair. Among the nations who are called fair or white, there are so many shapes and shades, that no two men could be expected to agree in fixing where the white ends, and where the tawny, the red, the brown, or olive begins. The shapes and features of different nations, said to have the same colour, differ again as much as their shades of colour, whether we regard the white, brown, olive, or black. With this view of the subject, is it reasonable, is it less than whimsical, to depart from the ancient

hypothesis, of one race of men, for the sake of making five or six?

In distinguishing the different species of animals, it is generally agreed, that "any two animals who can procreate together, and whose issue may continue to procreate, are of the same species." To this rule we have not discovered one certain objection among birds, quadrupeds, or other animals. If the races of men are to be determined by the same rule, they are all of the same family. There are men who differ very much at present from one another, in manners, shape and colour, who, nevertheless, must be allowed to have sprung from the same stock, if we give any credit to the evidence of history. The argument by which it is contended, that the human race are not all of the same species, appears to rest upon their difference from one another in shape and colour; but this argument would be weak and futile if it was applied to vegetables, or to animals of any other kind. The species of plants cannot be distinguished by colour. The ranunculus, in its native soil, is always yellow; when it is transplanted, it acquires various colours,

Tulips, auriculas, and dianthus, of the same species, differ greatly from one another in colour. The smell, taste, colour, and size of pears and plumbs are changed by the difference of air, water, climate, and culture. The changes that quadrupeds sustain by heat, cold, soil, climate, and food, are not less remarkable than the changes that are observed in vegetables. The farther they are removed from their native soil, wherever it lies, the greater changes they sustain in shape and colour. Quadrupeds of the same family, in the state of nature, are generally of one colour; but they become of various colours by domestication and rich pastures. Wild cattle are brown; tame cattle are of many colours. Horses, deers, and goats, brought into a state of servitude, or handled and fed by men, change their colour. The horse of Arabia is strong and beautiful, with short hair and a smooth skin. In Russia he is clumsy, with a large head, and is clothed in winter with a shaggy, frizzled coat. In China he is weak and spiritless. The cow among the Eluth Tartars is seven or eight feet high; in the highlands of Scotland she is four feet high; in Cuba she has large

horns; in Iceland no horns. The sheep, in its wild state, among the mountains of Great Tartary and China, is large and bold, high as a deer, and covered with hair. In Muscovy, Iceland, and some other cold countries, it has four or six horns; in temperate climates no horns. In Persia, Barbary, and Egypt, sheep have broad tails; in cold climates their tails are small. In temperate climates they have fine wool; in hot climates they have hair instead of wool. Whether the sheep, so different in their appearance in one country from those of another, be of the same race, cannot be questioned, for all the marks of distinction may be altered, in a few years, by the change of soil and climate. We have seen the immediate descendants of excellent wool-bearing sheep, alter in form, and become hairy as goats, by removal from a temperate to a hot climate. Animals in general that are short lived, change their appearance soonest by the change of climate; for such animals seem to be most affected by the influence of soil, air, and nutriment. Birds of the same species, in their wild state, are all of the same colour; they acquire different colours by

domestication and a change of food. Pigeons, in the state of nature, are alike; but domestic pigeons are of many colours. The turkey in America, its native country,* is a

* Some writers have alleged that the turkey is a native of the old continent; and many people, deceived by its English name, presume that it came from Turkey. Those people are not informed that in many parts of Europe it is called "coq de Inde," the cock of India, alluding perhaps to the West-Indies. It will hardly be alleged that the Greeks or Romans were acquainted with the turkey; for the fowl which they called Meleagris, or Gallina Africana, was doubtless the Pintado, or spotted Guinea fowl. Nor do we find that any writer, in Europe, has ever spoken of a fowl that can be supposed to have been the turkey, before the discovery of America by Columbus; but mention is made of the turkey, called by a different name, in every part of Europe, within forty or fifty years of that discovery; and it is uniformly spoken of, about that time, as a rare and valuable fowl. We are also assured by travellers, as Du Halde, Chardin, and others, that turkeys were hardly known two hundred years ago in Persia, China, India, or upon the coast of Africa. The few that were seen in those regions were confessedly of late importation. On the contrary, all the adventurers to America, who have written their travels, soon after it was discovered, speak of the turkey as a fowl that abounds in the new world; and many of us know that wild turkeys are exceedingly numerous in such parts of the country as are not settled. From these facts, which can hardly be disputed, it seems very probable that the turkey was originally brought to Europe from America. This, however, may be called presump-

dark-coloured bird, almost black, and the whole family are of one colour. By domestication many of them are speckled, and some of them have become white. In general we have reason to believe that every quadruped, and every fowl, changes its shape

tive evidence, wherefore the following is submitted as clear and direct.

In the year 1496 Henry the seventh, desirous to partake with the Spaniards in the discovery of new countries, dispatched Cabot, an experienced seaman, in quest of land to the westward. Cabot was accompanied by three small vessels, fitted out in London. (Verulam's History of Henry 7th.) During their expedition they discovered Newfoundland, and traced the continent from latitude 45 to 38, landing at many places, and trading with the Indians. On their return to England Cabot was rewarded with a pension of one hundred and twenty pounds per annum. There is, in the Herald's office in London, a petition from a gentleman whose name was Strickland, who seems to have commanded one of the vessels that sailed with Cabot. The petitioner refers to the pension that Cabot received for his services, a pension that he needed, for he was poor. He claims no pension for himself, being in affluent circumstances, but he prays that his Majesty would give him some mark of royal favour, by suffering him to wear for the crest of his arms, "a Turkey, the bird that we imported from America." That very gentleman was the ancestor of Sir George Strickland, Bart. of Yorkshire, who wears a turkey for the crest of his arms. I did not copy this extract from the record, but received it from a gentleman whose veracity I could not question.

and colour by the change of food, habits, and climate, full as much as the human race are observed to differ from one another, without giving rise to any doubts concerning the family from which they sprang.

The chief difference between the men of Africa, in latitude five, and the men of Europe, in latitude fifty, is, that one is black and the other is white, these colours being perfectly opposite; for the circumstances of frizzled hair or long hair, flat nose or high nose, thick lips or thin lips, seem to be exceedingly variable. Some black men have one feature, and some the other. Brown northern men are equally distinguished, as black Nigritians, by the flat nose and thick lips. Features may be altered by care or the want of care, but it would be difficult to make a black man white. The nose may be depressed in infancy, from a perverse idea of beauty; and the nose being depressed by any means, accident or design, the flat nose may become a family feature. I have seen a family of dogs, in Carolina, continue for three or four generations without tails, because one of their ancestors had lost her tail by some accident. In Amboina there is a

family of cats with stumpy tails, and dogs in Persia without tails.* The Houzouans, in Cafraria, a dark coloured tribe, whose noses are flat, regarded Vaillant as deformed and monstrous, because he had the common European nose.† The flat nose and thick lips are best adapted to a cold climate, wherefore they should be considered as natural features in high latitudes. The thin lip and prominent nose are more subject to injury from extreme cold.

Nature‡ fits man and beast to the climate.

* Pallas.

† Vaillant's Travels.

‡ In the course of this dissertation I shall have frequent occasions to speak of the operations or the *powers of nature*. When I use the word *nature*, I would not be supposed to mean that visionary, undefined, inexplicable something, to which moderns often refer, which is not a deity as they allege, though it has the power and attributes of a deity. By the word *nature*, I mean the course of action, or the general laws by which the Supreme Being is pleased to act upon material bodies. A watery surface is warmed by the sun. Vapours ascend by heat. Those vapours, in the upper and colder regions, are changed into rain; that rain promotes the growth of plants, and those plants bear fruit. Such are the operations of *nature*; or, to speak more correctly, such is the regular process by which the Maker of all things is pleased to provide for the support of man and beast. Material bodies, as such, have no power except the simple *vis inertiae*, the power of re-

In warm climates, a great proportion of the blacks have thin lips and the Roman nose. The difference of feature in the blacks of Nigritia, from those of Asia, may possibly be accidental and hereditary, though it rather appears to be the effect of a climate that is hostile to civilization. The African, with a flat nose, thick lips, arched shins, and large hips, in a few generations, after he is removed to a better climate, and has been accustomed to sit, and dress, and feed like civilized people, is observed to alter greatly in his shape and features.* The black inhabitants of India, who differ so much in shape and features from those of Guinea, whose climate is also different, have formerly been a polished nation. Their manners are gentle.

All the changes that have been made in the human species; all the difference in colour, shape, and feature that has been ob-

sistance. Every motion is performed, every thing is done in the material world, by the constant, universal agency of the God of nature, who is every where present always.

* This is very observable in the Negroes on Long-Island, whose ancestors were imported, by the original Dutch colonists, above one hundred years ago.

served between one man and another, may doubtless be produced by climate, food, and education or habits. When we suppose that a white skin may become black; that a graceful, tall figure may become short and clumsy; or that soft, pleasing features may become hard and disgusting; we may seem to speak of events that are beyond the power, or the common operations of nature; because in this case we view the extremes. But we should consider that nature does not produce those changes by sudden leaps. She passes from one extreme to the other by short steps, and by shades that are hardly perceptible; as darkness takes the place of light, and summer is followed by winter. Although the mind cannot embrace, at a single view, the whole progress, from one extreme to the other, every observant person must have noted many of the steps by which a change in colour, shape, and features is effected; and he must have discovered that such alterations are produced by climate, food, or sentiment. If small changes have been effected, in a short time, by slight causes, we naturally infer, that great changes may be effected, in a long series of years,

by powerful causes. We observe that the complexion is soon altered by the weather and climate. The finest skin, by a few months residence in the West-Indies, and frequent exposure to the sun and wind, becomes almost brown. If such are the effects of climate alone, upon the colour, in a few months, the effects of many ages must be great upon men who live, almost naked, under a scorching sun; and upon men who darken the skin by paints and grease. A considerable length of time is required to alter the shape and size of the human race; but we see that different countries produce men of the same colour, who differ very much from one another in size. We know that men are affected, like other animals, by food, climate, and the mode of living. We observe that other animals are large or small, active or clumsy, according as they are well or ill fed, as they are kept warm or exposed to a rigorous climate; from which we can readily perceive that the shape and size of the human race must be greatly affected, by difference in climate, habitation, dress, and food. There is a great difference between the features of a savage African, or

Laplander, and those of a civilized European. Part of that difference may be accidental, but the whole of it may be the effect of climate, or it may be partly effected by sentiment and habits. The prevailing passions, and common train of ideas, never fail to make a strong impression on the countenance, and to modify the features. Every person accustomed to read the countenance, can instantly distinguish a man or woman, of a benevolent and sweet temper, from one that is passionate, sulky, or vindictive. This, like all other knowledge, is acquired by attention and study. The shepherd who is accustomed to looking at his sheep, can distinguish the individuals of a large flock by their features; to other men they are nearly alike. Nature writes, in strong characters, on the human countenance; it is our fault if we do not read. How great is the difference between the features of a melancholy and a frantic madman? If such difference can be effected, in a few months, by opposite passions, it will follow, that passions which follow us from infant life, and grow with our growth, must be clearly marked in the features. Too much care, or too little

care; intense thinking, or the want of thought, are equally legible in the face. There are certain opinions and customs peculiar to every nation. The different desires or passions that arise from such diversity of opinions, produce what is called the national feature. Every man observes that the English face differs from the Scots face. He observes also that the French, the Spanish, the German, and the Polish faces differ from one another and from the English face. People of the same nation and country, when they belong to different religious sects, may again be distinguished, in many cases, from one another. The Moravians, and some other sects, whose tempers are regulated; who are in the habit of controlling their passions; who do not riot, swear, get drunk, and, Centaur like, suffer the beast to run away with the man, may be distinguished by their countenance. Monks and nuns, in a short time, acquire the monastic countenance, and may be distinguished from other subjects of the same nation. I have said nothing of the Jews, who have ancestral features, and whose difference in food and sentiment, for many ages, have marked them with strong charac-

ters. If the passions, opinions, and national habits are marked in the countenance, and affect the features of people, who live in the same climate; whose clothing, food, information, and manners are nearly alike; how great a difference, in countenance and features, may we expect to find among people, who, for many ages, have differed from one another, in every thing wherein men can differ?

The great distinction between the extremes of men seems to rest in the colour of the skin; for their internal structure is not different.* The white man and the black

* I am not inattentive to the observations of Mr. Charles White, of Manchester, who attempts to prove, in his "Gradations in Man," from the structure of their respective bodies, that the black man of Africa is of a different species from the white man of Europe. According to his philosophy, the sable inhabitant of Negritia is not called man with so much propriety as a goat may be called a sheep. He stands upon one of the steps between the man of Europe and the monkey of Asia, being somewhat superior to the ourang outang. Let us examine the chief arguments by which this curious hypothesis is supported.

1. Some Negroes have six lumbar vertebrae instead of five, the usual number in white men.
2. Some Negroes have eight long ribs, or true ribs, instead of seven, the usual number in white men.
3. The fore arm of a Negro, compared with the os

man are perfectly alike in the situation, number and proportion of the internal parts, with

humeri or upper arm, has been found to be an inch longer than the fore arm of Europeans of the same stature.

- 4. The bones of a Negro's leg are gibbous.
- 5. The massater muscles of a Negro are stronger than those of a white man, wherefore he seems to have been formed for living upon vegetables.
- 6. The senses of hearing, seeing, and smelling in Negroes is stronger than in Europeans, as also the memory.
- 7. The Negro is short-lived.
- 8. The Negro does not sweat.
- 9. Mulattoes, the offspring of Europeans and Negroes, are mules. They are not prolific.

To the first, second, third, and fourth of these distinctions it may be replied, that some white men, as well as Negroes, have six lumbar vertebræ instead of five, and some have eight true ribs instead of seven. Neither is the proportion between the length of the upper and lower arm, or the length of the leg and thigh bone, alike in all Negroes, nor in all white men. The parent from whom the chief family of the Negroes sprang may have differed in some particulars, as white men frequently differ from the common standard; and the food, the climate, or the mode of sitting or resting, would naturally alter the size of particular muscles, and the shape of the leg. These distinctions disappear by the change of manners and climate.

It will not be disputed that the sense of seeing, hearing, and smelling, is stronger in many cases among the Negroes, than it usually is among civilized Europeans; but it must also be admitted that the Tartars of Europe and Asia, the Indians of America, and all other savage nations,

such exceptions only as appear among indi

enjoy those senses in equal perfection with the savage of Guinea, for those people strengthen the senses by using them; thus blind men have the sense of feeling more correct than other people.

The seventh, eighth, and ninth distinctions were certainly advanced by Mr. White upon bad authority, for they are not supported by correct observation. It is well known in the West-Indies that truth is on the other side.

After following Mr. White through his anatomical observations, it may not be improper to pay some attention to another anatomical discovery, that is deemed, by its patrons, to be fatal to the Mosaic history. The weight of the discovery rests upon what is called, the facial angle; or the angle that is included between two lines, one of them extending from the ear to the lower part of the upper jaw; the other line extending from this part upwards along the forehead. It is observed, that the facial angle, in the head of a white man, usually includes about 80 degrees; in the Negro it includes 70 degrees; in the ourang outang it includes 58 degrees; in a fox it is much smaller. According to those measurements, the Negro excels the ourang outang very little more than the white man excels the Negro. In other words, two men who are both possessed of reason and speech, differ little more from one another than one of those men differs from a brute without reason or speech. Can this be deemed correct reasoning? If the greater facial angle may be supposed to mark a superior order of beings, it will follow, that the ancient Grecians were of an order superior to the present Europeans; for their skulls measure an angle of 90 degrees. Is that race of men extinct? Or is it not more probable that the shape of the head, by different modes of dressing, and other causes, is altered?

viduals of the same nation; the whole difference is in the skin, or rather it is placed upon the skin. The flesh of the human body has three coverings. The first, or thickest, is called the skin; the second, that lies upon the skin, is a thin net-like covering, called the reticular membrane; and the third covering, or the outer, thin, pellucid covering, is called the epidermis or scarf skin. The colour is deposited without the skin: it rests in the mucus that is lodged in the reticular membrane. This mucus, though it is not oily, does not easily mix with water; and it is rather more tough in blacks than the colourless mucus of white people. The skin is supplied with arteries, veins, lymphatics, and nervous papillæ, for the purpose of feeling. Those papillæ are protected by the fine scarf skin, which is without vessels or feeling; but this skin would have become too dry if it had not been constantly softened by the mucus that is lodged in the reticular membrane, and is secreted by the vessels of the skin. In different parts of the body this mucus is more or less pellucid; even in white people, where much is required, as under the arms, it is

of a dark colour. When the skin of an African has been burnt, the new skin, being disordered, does not secrete a dark mucus, and the part is no longer black. As the use of the reticular membrane is to keep the nervous papillæ, on which feeling depends, soft and moist, it will follow, that the greater power the air or sun has, in any climate, to harden or dry the skin, the thicker the reticulum and mucus substance should be. Happily, the causes which require such greater defence seem also to operate in preparing that defence by promoting the secretions. Heat relaxes the skin, enlarges the pores, diverts the fluids to the periphery, and diminishes all the secretions, except the cutaneous. Thus men, in warm climates, became black; and the colour once induced becomes hereditary. Such are the natural effects of climate in colouring the skin. Certain habits of living have similar effects. Men who feed much upon onions, garlick, and leeks; those also who use many aromatics, are of a dark colour. Jews, who differ from other people in many articles of food, often differ in complexion from the nation among whom they live. It has al-

ready been observed that men and beasts are fitted to the climate. The bear, who is black in warmer climates, becomes white in Siberia; and so does the fox, squirrel, hare, and wolf. Some black foxes there are in high latitudes; but their fur is remarkably thick, and they are obliged to live chiefly in caverns. The very flowers that appear in cold seasons, or cold places, are usually white; as the snow-drop, narcissus, hyacinth, and lily of the valley, which come early in the spring. Flowers, on the contrary, that blow in warm seasons, are usually of a dark colour, blue, purple, or red, that are not greatly heated by reflecting much light. The changes in colour that we observe in animals, from grey, brown, or black, to perfect white, do not happen by accident; they are uniform and constant, for nature does nothing in vain. She causes animals to become white in cold climates, because they have most occasion for heat; or, to speak more correctly, because they are in danger of suffering by cold. We formerly had occasion to observe, and the observation is supported by many experiments, that black substances are the best conductors of heat; or, in other

words, any substance that is black will be found to transmit heat much sooner than a white substance, composed of similar materials. Now it is to be observed, that animals of every kind, biped and quadruped, are furnished by nature with a sufficient supply of heat for all the purposes of life. A small deduction of heat is always agreeable to them;* in other words, they prefer an atmosphere that is colder than the blood.†

* The heat of our blood, in perfect health, is 98 degrees, but we prefer an atmosphere that is at least 20 degrees colder.

† To explain the cause of animal heat has ever been accounted a difficult theorem. It may be admitted, in general, that animal heat depends on respiration. The blood of animals in health, is more or less warm, according to the capacity of their lungs, when compared with the size of their respective bodies. The fish, that uses little air in breathing, has cold blood when compared with terrestrial animals. The hawk, and other birds of great flight, that have large lungs, have the warmest blood. We have the power of increasing the heat of our blood by exercise, or any other means by which respiration is quickened. The common air, in which we breath, is composed of two kinds of fluids, called gas. One is called oxygen, the other azotic gas. The quantity of azote is to the oxygen nearly as three to one; but the oxygen gas alone is useful in respiration, therefore it is called vital air. It is known that any given quantity of common air being breathed in, for a certain time, becomes useless. An animal can live in it

Animals suffer, in cold climates, not by any defect in the source of natural heat, but by

no longer, for the vital part, or the oxygen, is consumed. This change, in the composition of the atmosphere, could not be effected except by what is called elective attraction, by which the original texture of every particle of air is destroyed. The air, in passing through the lungs, finds some other substance to which the oxygen or vital part adheres more strongly than it adhered to the azotic gas; by such adherence, a new composition, or a new body is formed, and the oxygen gas ceases to be fit for respiration. It cannot be necessary to explain what the substance is to which the oxygen gas adheres; viz. the substance thus detached from the blood by the medium of the lungs. It has been called the carbonaceous principle. It must be something that would destroy the system if it was retained; some noxious matter. Whatever it may be, the conclusion is the same. We discover that new combinations and decompositions are formed in the lungs by every act of breathing. In this case there is a chemical mixture, and heat is uniformly generated by all such mixtures. I formerly ventured an opinion that heat, which arises from chemical mixtures, is caused by the increased vibratory motion of the parts in the act of forming new combinations; but this phenomenon is otherwise explained, by alleging that all fluids contain much latent heat; that the new composition formed in the lungs is fixed air; that fixed air contains less absolute heat than vital air, wherefore the vital air, when the new composition is formed, deposits part of its heat, or communicates that heat to the blood, where it becomes sensible. This theory is plausible, though there be experiments which render the doctrine of latent heat questionable. Whatever the cause may be, the effect is uniform and certain.

the loss of heat which is absorbed and removed by the cold external air. Clothes are not worn in cold weather to make us warm, but to prevent us from becoming cold. They are worn to prevent the escape of natural heat. We suffer most in cold weather, when we are clothed with porous garments, that readily transmit the particles of air, or suffer them to enter; for every particle of cold air absorbs and removes a portion of native heat. We also suffer when we are clothed with garments that are good conductors of heat, and thereby suffer it to escape. The white covering of a bear is not a good conductor; it does not suffer the internal heat to escape with the same facility that it would escape through a black covering; for this reason bears have white hair in cold climates. Silk and wool, being animal substances, are not good conductors of heat, therefore garments of white silk or wool are warmer coverings in the shade, than black garments of similar materials; but black garments under a warm sun transmit too much heat. The body should be protected by white garments under a warm sun, because white reflects the light, and prevents too

great an increase of heat upon the skin. But the case is different when it refers to the colour of the skin. White is not a proper colour for the skin in a warm climate, because a white skin, when exposed to the sun, reflects the light; in which case the surface is heated by resistance, or by the action of light upon the white skin, and the perspiration is checked. In such a climate, white men cannot preserve their health. A black skin is fitted to a hot climate, for it transmits the light, so that the surface is not heated by reaction, or by reflecting the light. In this case a copious perspiration is continued, and cold is generated; or, to speak more correctly, much heat is carried off by the perspirable fluids.

In all cases the effect of climate is to fit animals and vegetables, so far as they are capable of change, to the temperature in which they are placed. The different kinds of grain are fitted to the climates in which they grow. Indian corn ripens slowly in Carolina, where the summers are long; it ripens quickly in Canada, where the summers are short; but Canada corn, planted in Carolina, in a few years changes its quality. The

stalks are short in Canada, that the ears may be near the warm surface, but in Carolina the stalks are tall, and the ears are long in ripening. In a hot climate, man becomes black, because black is the colour best fitted to that temperature; and it is obvious, to daily observation, that a warm sun tends to darken the skin. A warm climate takes the wool from the sheep, lest it should suffer by the heat, and a cold climate gives a shaggy covering to a horse, lest he should suffer by the cold. In the highest latitudes, the climate gives a white covering to quadrupeds, that they may the better retain their natural portion of heat. Upon a general view of the natives of warm climates, we observe that their external appearance corresponds with the obvious blackening cause. The colours of men are affected by sun, wind, rain, exhalations from the earth, seas, rivers, and lakes; by their habitations, clothing, bathing, unctions, and by sundry internal causes, as the state of the fluids, secretions, and aliments. There may also be other causes of which we have not any knowledge. In the Peninsula of India, in most of the adjacent islands, and on the eastern coast of

Africa, where the heat is tempered by variable winds, or by exhalations from the sea, the black natives have long hair, not frizzled; or their colour is less dark, or their perspiration is less copious. The inhabitants of Siera Leoná, Angola, and the several intermediate states, live in a hot climate; they are less civilized than the black Asiatics; more exposed to the sun, and more involved in dirt and grease. These are blackening causes, but the great and most essential difference remains. They are constantly exposed to winds that originate in the most barren, parched, and inhospitable part of the globe. From an ocean of sand, from a burning desert, in which a lizard or a serpent can hardly subsist, the trade wind passes to the dusky Africans; it serves them indeed for the purpose of respiration, but their external appearance must be greatly affected by an atmosphere loaded with such exhalations. If the harmantan winds that rise in the same deserts, are so deeply charged with noxious vapours as to cause the green leaves of vegetables to perish, we cannot be surprised that the ordinary winds should darken the human skin. By such exhalations the-

hair is crisped, so as to resemble wool. This change in the hair, like the change of colour, is of considerable use to the subject, for, like a sreen, it protects his head from the vertical sun.

We see the changes that are produced by warm climates, and we disover in some cases, the reason why such changes are necessary or useful; but the method by which they are effected is beyond our reach. Perhaps the cutaneous seeretions, whieh are very copious and useful to the sable African, may cause him to have a short, slender, and frizzled covering to his head instead of hair. His wool is small at the roots; it does not receive much nourishment from the skin, and we know that long hair requires a large supply; for there are many people whose bodily strength is much impaired by the extraordinary length of their hair. The fluids, taking a different course in the dusky Africans, their hair cannot thrive. In all cases where the hair is woolly, the perspiration is copious and offensive; but the secretions from the skins of black Asiatics, who have long hair, is not equally gross.

If we trace the nations who inhabit the

old continent through their various migrations, we shall find indisputable proofs that men change their colour with their climate; becoming darker or less dark, according as they move to a warmer or a colder climate. As men live with most ease in warm climates, they seldom migrate to those which are colder, therefore the examples of a whitening process are not very frequent; but there are some indisputable cases. The inhabitants of Denmark are generally fair, with blue eyes. The inhabitants of Bohemia, Poland, and Russia, are brown, with dark eyes, though some of them live in a higher latitude; but these nations are descended from the Medes, who lived formerly in the vicinity of Persia, a warm country, and they migrated long after the Goths and the other Teutonic tribes, by whom Denmark was peopled. The Danes, by longer residence in their present country, have acquired a fine complexion, and their hair has lost its blackness.

Instances present themselves every where of migrations to a warmer climate, and the consequent changes of colour and features have never been questioned. The fair and

fleshy northern conquerors, who fixed their habitations in France, Spain, and Italy, have now acquired the darker complexion, and more slender form of the countries to which they came. The Moguls, who invaded Indostan, and settled there, have acquired the darker complexion, the figure, and features of the people they supplanted; they are nearly black. The Jews, who do not intermarry with other people, and whose food, in many articles, differs from that of other nations, have settled in every climate that is not very cold, and among nations of every colour, but they change their complexion in every case, and acquire some likeness in colour, form, and features to the people among whom they live. A colony of Portuguese, who settled at Mitamba, in Africa, are become black, with crisped hair; they are only distinguished by their language from the aborigines.* The descendants of French and English families, who have lived two or three generations in the West-Indies, are tending fast towards the complexion of the original inhabitants. Under all the benefits

* Account of the Trade of Great-Britain with Africa.

of care and cultivation, they are not of the same colour with the people from whom they sprang. The Chinese and Arabs possess a greater variety of climate than any other nation, and they have lived longer unmixed in the same country. Each of those nations is certainly descended from a particular stock, and yet we find, that by moving to the northward or the southward, the Chinese and Arabs change their colour. The shades or tints of the skin, in each nation, change, by insensible grades, from brunets, nearly white, to a tawney colour, nearly black, according to the climate. The blackening process in some of the Malacca or Philippine islands, is very observable. These islands must have been settled from the continent by tawney or brown people. In the process of time they became black in that scorching climate, and their heads were covered by something like wool instead of hair. The Malays, not many centuries ago, invaded those islands, and extirpated the original inhabitants, or drove them to the mountains; hence it followed, that when the Europeans lately discovered these islands, they found, near the coast, a

tawney race of men, almost black, with long hair; but in the mountains they found a darker coloured race, with frizzled hair, speaking a different language.

We have seen instances of men with a tawney skin, from a warm climate, becoming fair by living in a higher latitude, and we are assured that whole nations have improved their complexion by a similar change of climate; but the cases are few, if any, in which we are credibly informed that a race of men perfectly black have become white again. This process, as I conceive, would require much longer time than is necessary to effect the opposite change. It is nevertheless apparent that such a process is within the powers of climate. The Hottentots must have come from a warm climate, from the torrid zone, where the inhabitants are black; but the Hottentots are not black at present. By living in a higher latitude, near the Cape of Good-Hope, they have changed their complexion. When rescued from grease and dirt, their skin is swarthy or brown. If it should be alleged that those rude unlettered people migrated from the tropical regions, before they had

become perfectly black, an event that is not improbable, still the position is equally clear, that colour is the effect of climate, since other men who continued there are black.

To the numerous cases that have been stated, in which men have changed their colour by a change of climate, I shall add a remarkable discovery lately made in the East-Indies.

In the year 1806, Dr. Buchannan and Dr. Kerr, gentlemen of great learning and integrity, were appointed by the governors of Bengal and Madrass, to examine the state of the Christian churches in Hindostan. The researches of those gentlemen were chiefly confined to that tract of country which lies between the western coast of the Peninsula and the Gants, a ridge of mountains that runs parallel with the coast, and is seldom more than sixty or eighty miles from the sea, including the kingdoms of Cochin and Travancoure. Those gentlemen report that the number of professed Christians on that coast exceeds 200,000. But they found, in the same country, many synagogues of Jews. Some of those Israelites or Jews are white; others of them are black. The white Jews

live near the coast. The black Jews live at some distance from the coast; near the mountains or among them. The white Jews are counted enemies to the black Jews. It is established by tradition and by the concurring evidence of authentic records, that the black Jews had settled in India long before the Christian era. It is also admitted that they settled there before the white Jews; and the station they occupy is a sufficient evidence of the fact. Those synagogues of black men, call themselves Beni Israel, or Israelites. They should not be called Jews, for that appellation belongs only to the tribe of Judah. The white Jews have no ancient historical records nor manuscripts among them. But the black Jews have copies of the law in their record chests. Some of those copies are very ancient, and written in a character that resembles the Palmyrene Hebrew. The reader will recollect that the ten tribes, who were not properly called Jews, were carried into captivity above seven hundred years before the Christian era, Reuben, Gad, and Menassah, had been carried into slavery before the siege of Samaria. But the siege of that city lasted three

years. It is not improbable that some of the Israelites, during that siege, made their escape to India, by way of the Red Sea. In whatever manner they may have travelled, it is fully established that many synagogues of the Hebrews, commonly called Jews, were established in India above 2000 years ago. The white Jews belong to a later colony. They probably wandered from a higher latitude, long after the destruction of Jerusalem; and being of the tribe of Judah, or Idumean proselytes, the ancient enmity subsists between them and the Israelites. Be this as it may, it is fully established, that by living in India, 2000 years or more, near the tenth degree of latitude, a detachment from a white nation are become black. If this shall not be taken for a proof that climate blackens the skin, all reasoning on the subject is useless.

Upon the whole, we observe a regular systematical change in the colour, shape, and features of men, to the north and the south. From the climate of a fair skin, fine shape, and pleasing feature, going to the northward, the skin becomes of a blackish brown, the figure clumsy, and the features

coarse. Going to the southward, in the same manner, we alter the complexion, shape and features, until the skin becomes perfectly black, the shape in some countries less graceful, and the features coarse: the colour being altered, according to the soil, situation and climate, by the most regular and insensible deviations and shades.

Those facts being considered ; it being also observed, that every change is most proper and best adopted to the climate, or that it is the natural effect of such climate, there can be no moral or physical proposition more certain than that all those people are descended from the same family.

The philosophers, who discovered several races of men on the old continent, have not failed to plant a new and distinct race of men in America. In support of this opinion, they allege, that the American Indians do not differ from one another in colour, like the inhabitants of the other continent: * their colour also is different from that of any other people: that the American has no beard; that he is more frigid, more weak and

* Raynal's Phil. and Polit. Hist.

more cowardly than the inhabitants of the old continent.

This humble and subordinate character of the American savage has not always been urged, as a direct proof that he belongs to a separate race of men, for it has occasionally been advanced in the pride of country ; a species of pride that will not suffer children to equal their ancestors ; that makes it impossible for them to obtain such equality, because there is something in America, as they allege, "that is less favourable to the strength and perfection of animal creation."

The complexion of the American savage, or the sameness of colour that is observed among those people, forms the most remarkable trait in their character. When we observe, in the old continent, all the varieties of shades, from perfect white to perfect black, we are naturally surprised that in the new world, which extends to a higher degree of north and south latitude, including every habitable region, there should not be a black man, nor one, as it has been alleged, who is perfectly white. The natives are generally of a reddish brown. Their colour seems to be a mixture of white and black,

reddened by paint, or by the blood appearing through the skin, which is not thick. This again receives a brownish cast by more or less exposure to the weather.

On the whole continent of America, there is not a black Indian, nor is there a spot for which a black skin is required. No winds prevail in America that rise on a hot surface or a sandy desert; nor is there any large tract, within the tropics, that is remarkably hot. The greater part of this continent is divided by a long chain of mountains, that extends from north to south. These mountains, the highest in the world, have an astonishing effect upon the climate, on both sides of the continent. They lie across the trade winds, and cut them off; for they rise above the winds. They are generally distant about seventy or eighty miles from the Pacific Ocean, within the tropics; but the whole space between those mountains and the Pacific Ocean, is so far from being parched by a hot vertical sun, that the inhabitants enjoy the most pleasing temperature. There is a sandy desert, nearly one hundred miles in extent, between Sachara and Lima, about the seventh degree of south latitude. Such

an expanse of dry sand, under a vertical sun, in any part of the other continent, would produce great heat, and give a sable colouring to the people in its vicinity. But in the province of Lima, it can produce no such effect, because the wind in those regions, ought to blow from the east; but there are mountains in that direction, at no great distance, covered with perpetual snow.

The trade winds to the eastward of the Andes, are checked by those mountains; there they deposit all the water with which they had been charged. The quantity of rain in that region being great, the process of evaporation must also be great, whereby the heat of the atmosphere is moderated. A reddish brown, with a tawny cast, is the darkest colour that can be expected in such a climate. America, on both sides of the Andes, above the tropics, should produce, as in some parts of the old continent, in similar latitudes, a brown or dusky race of men, until we reach a high degree of latitude; and it is very questionable, whether a race of men, perfectly fair, will ever be found to preserve that complexion for many ages, in any part of America, to the eastward of

the Cordilleras; except in high latitudes, and near the coast. There are not any people, on the old continent, perfectly fair, except those who live in high latitudes, where the westerly winds come from the sea, at no great distance, so tempered as not to be very sharp nor very dry. This rule applies to Great-Britain and Ireland, to the Germans, Danes, Swedes, and Circassians;* but going to the eastward in the same latitude, as we depart from the ocean or the Black Sea, having more dry land to the windward, by which the air is charged with sundry exhalations, the skin changes its colour; it ceases to be perfectly fair. There is not, in the eastern part of Asia, between the extremes of heat and cold, a nation perfectly fair. The best complexions are found near the head of the Ganges, among the mountains of Thibet. We may discover a concurrence of circumstances, in the British Isles, and near the German Ocean, not found in many other places, which are necessary to a fair skin. They are little exposed to the warm sun;

* London in latitude 51° , Prague 50° , Copenhagen 55° , Circassia 45° , having the Black Sea, and the Sea of Asoph, to the south-west, and north-west.

they have little intense cold, and their winds usually come from a watery surface. Their westerly winds are from the ocean, and their atmosphere is loaded with moisture. They have not much rain, but their showers are of long continuance; they have much dark cloudy weather, and the rays of the sun are feeble when he visits the inhabitants. They never experience that warm clear sun, which freckles or tans the skin; nor those long intense colds, which injure the cutaneous nerves, and produce a reddish brown. While America remained a great forest, inhabited by savages, under the constant dominion of westerly winds, there was not any climate on the eastern coast, in which we could expect a fair skin. By the progress of cultivation, the general course of the winds is materially affected, in the middle and northern States; and in the process of time, we may expect such a prevalence of easterly winds,* near the coast, in those States, as shall prevent that tendency of complexion to the clear brunet, which prevails in temperate climates, in other parts of the world.

* See proofs and explanations, A.

Although no part of America is fitted to the production of a black skin, nor would many parts of this continent be expected to produce a skin perfectly fair, among the original inhabitants; we are not to believe, as some writers have alleged, that the American Indians are all of one colour. Their skin is tinged with a variety of shades between white and black; but there are Indians, as we are told, above the latitude of 45 degrees north, who are nearly white; and there are Indians in Guiana and Brazil, at a distance from the coast, whose skins are very dark. I was informed by the Little Turtle, who is a chief of the Miami tribe of the lakes, and has an extensive acquaintance with the Indians, that the northern Indians are much fairer than those who live in warm climates; except that Indians, who live near the lakes, and are much exposed to the sun, in fishing and swimming, have darker skins than other northern Indians. He understands that Indians who live northward from the sources of the Mississippi, are fairer than those of his own nation, who live in the opposite direction.

The Indians at Matagrassa, as we are told by Condamire, are of different shades, ac-

cording to the elevation of the country, some of them being almost fair.* The testimony of Molina is also very explicit on this subject. "The natives of Chili form but one nation, that is divided into various tribes, who have a similar physiognomy, and speak the same tongue, which may be called the Chilese language. It is soft, harmonious, regular, and abounding in words, that in all cases are fit to express, not only physical but moral and abstract ideas. Those people are of a brown coppery colour; but the Boroani, who are situated in the centre of the province of

* Voyage de Condamire.

" Los nativos Chilenos forman una sola nacion dividida en varias tribus, todas las quales tienen una misma fisonomia y una misma lengua, que ellas llamen Chiliduga que quiere dicer lengua Chilena y la quales dulce, armónica regular, expresiva, y muy abundante de terminos optos e idoneos para expresar no solamente las casas fisicas generales ó particulares sino tambien las casas morales y abstractes. La carnacion de estos pueblos es de un color pardo bermejo que tira a cobro ; Pero las Boroanos situadas en el centro de las provincias de Arauco por los 39 grados de latitud austral son blancos y encarnadas, y tienen los ojos azules y los cabellos rubios como los Europeos que nacen en medio de la zana templada Septentrional; y sus facciones son regulares y aun en algunos hermosas.".

" Arauco, in the thirty-ninth degree of south latitude, are white and red, with blue eyes and fair hair, like the Europeans, who are born in the middle of the northern temperate zone. Their features are regular, and some of them are beautiful."*

When South-America shall be well cultivated, the timber cut down, the quantity of rain diminished, stagnant pools dried, and the rivers contained within their proper banks, the easterly winds being checked by the warmer surface of cultivated lands, a dusky race of men, nearly black, are to be expected in Brazil, about the latitude of Cape St. Roque; for that is the only part of America in which the progress of industry may darken the skin, notwithstanding the effects of civilization.

As no proof can be given, that the American Indians are a new race of men, I shall consider the other trite allegation, that "animal nature degenerates in America."

* Compendio de la historia geografica natural y civil del reyno de Chile.

Por el abate Don Juan Ignatio Molina.

I have not seen the Italian original, but I presume that the Spanish translation is correct.

This opinion, advanced by the eloquent Buffon, and supported by many arguments, has also been repeated by Dr. Robertson, the Abbe Raynal, and by other writers. The most remarkable appearance is that “all animals in America, including those who have been naturalized to the climate, are commonly inferior in size to those of the old continent. Nature appears, in that new world, to have finished her works upon a smaller scale.”*

“ There seems therefore to be, in the combination of elements, and other physical causes, in this new world, something that is opposed to the amplification of animated nature. There are some obstacles to the developement and perhaps to the formation of great germs.”†

* “ Ce qui paroîtra peut être beaucoup plus singulier c'est que tous les animaux d'Amérique, même ceux qui sont naturels au climat sont beaucoup plus petits en general que ceux de l'ancien continent. La nature semble s'être servie dans ce nouveau mond d'une autre échelle de grandeur.” Buffon Hist. Nat. d'Quadrup. t. iii. p. 173. Ed. Par. 1784.

† “ Il y a donc dans la combinaison des élémens et des autres causes physiques, quelque chose de contraire à l'agrandissement de la nature vivante dans ce nouveau

“ Although the savage of America is
 “ nearly of the same stature with men in the
 “ other continent, this is not a sufficient ex-
 “ ception to the general contraction of ani-
 “ mated nature through that whole conti-
 “ nent. The American savage.....has no
 “ hair, no beard, no ardour for his female.
 “ Though nimbler than the European, be-
 “ cause he is more accustomed to running,
 “ his strength is not so great. His sensations
 “ are less acute, but he is at the same time
 “ more timid and cowardly. He is without
 “ vivacity or enterprise.”*

“ America gives birth to no creature of

“ monde: il y a des obstacles au developpement & peutêtre
 “ à la formation des grands germes.” Ib. p. 207.

* Buffon’s History of Quadrupeds, vol. iii.

“ Quoique le sauvage du nouveau monde soit à peu pres
 “ de même stature que l’homme de notre monde, cela ne
 “ suffit pas pour qu’il puisse faire une exception au fait
 “ général du rapetissement de la nature vivante dans tout
 “ ce continent. Le sauvage est foible & petit par les or-
 “ ganes de la génération; il n’ a ni poil ni barbe, & nulle
 “ ardeur pour sa femelle. Quoique plus léger que l’ Eu-
 “ ropeen parce qu’il a plus d’habitude à courir, il est cepen-
 “ dant beaucoup moins fort de corps: il est aussi bien
 “ moins sensible & cependant plus craintif & plus lâche;
 “ il n’ a nulle activité dans l’ ame.” Buffon Hist. Qadrup.
 tom. iii. p. 208.

" such bulk as to be compared with the ele-
 " phant or rhinoceros, nor that equals the
 " lion or tyger in strength and ferocity.
 " The same qualities, in the climate of
 " America, which stinted the growth, and
 " enfeebled the spirit of its native animals,
 " have proved pernicious to such as have
 " migrated into it voluntarily, from the old
 " continent, or have been transported hither
 " by the Europeans.

" Most of the domestic animals with
 " which the Europeans stored the provinces
 " when they settled there, have degenerated
 " with respect to bulk and quality, in a
 " country whose temperature and soil seem
 " to be less favourable to the strength and
 " perfection of animal creation."*

The whole of this description is poetical and imaginary; for it has no foundation in nature. It is not from any vice in the climate, nor the want of proper food, but from the happy state of our country, from the general ease with which men have supported themselves in America, that domestic animals have been supposed to degenerate. Nothing less

* Dr. Robertson's History of America

than necessity has ever produced diligence in any kingdom or state. The man who has little to do, acquires habits of idleness, and he does less. In Europe, where the means of living are difficult, pasturage scarce and forage dear, the farmer is restrained in the number of his cattle; for this reason the cattle he keeps are attended with great care. They are duly housed and fed; the largest and best are preserved for breed, and every thing is done by which the size may be increased, and the value enhanced of the few he has for sale. The forest, in America, supplied the stock with pasture during the summer, and during the winter, in some of the colonies, when they were first settled. In the northern colonies, the cattle were fed in winter, but they were seldom housed. Hence it follows, that they were shrivelled and diminished, by cold storms, hail and snow, as the human species have been diminished in Lapland and Siberia. In addition to those diminishing causes, the first colonists, in most cases, were inattentive to the size of the male or female from which their cattle were to spring. We have a remarkable instance, in the Chickasaw nation, of the bad effects of breeding

from diminutive parents. Those Indians were originally furnished by de Soto with a breed of Spanish horses.* In that country the horses provided for themselves, the soil being good and the climate warm. The Indians, towards the middle of the last century, discovered that their horses were a valuable article of commerce; they could be exchanged for guns, blankets, and other necessaries; but the traders, in all cases, bought the largest horses, and the smallest were left to continue the breed. The effect is obvious, for the Chickasaw horses are confessedly smaller than they were fifty years ago. Other causes, sufficiently numerous, may be given of quadrupeds degenerating in America, under the shrivelling hand of indolence and neglect; but it would not follow, from a thousand such examples, that America cannot produce a race of animals large and vigorous as similar animals in the old continent. I do not say that America has produced greater or stronger animals than ever were seen on the opposite part of the globe,

* De Soto passed a winter among the Chickasaws, near the river Mississippi, and left some of his horses there.

but we know that bones have been found, both in North and South America, of sundry animals, granivorous and carnivorous, that were greatly superior in size to the elephant, the lion, or any other beast now living in the old continent. Although the beast, whose bones and claws were lately found in Green-Brier, in Virginia,* must have been a carnivorous animal, and greatly superior to the lion in strength; we cannot affirm that he was equally fierce; for it is admitted, that lions who are found near mount Atlas are neither so fierce nor strong as those who are nourished on the burning deserts of Nigritia. From this we infer, that extreme heat conduces to the ferocity of beasts of prey, and that animals of the carnivorous kind are less ferocious in America than in the hotter regions of the other continent. With respect to our domestic animals, whose parents have been imported from Europe, we should not boast in our turn, by saying that the present race is larger or stronger than those who were imported; but we may affirm, without dan-

* See Transactions of the American Philosophical Society, vol. iv. p. 246.

ger of being refuted, that there are numerous instances of cattle, lately raised in the United States, full as large as any of the same kind in Europe. If it should be alleged that animals frequently improve under the influence of our happy soil and climate, we might quote an author of great reputation, who lived in Europe, in favour of that position.* Speaking of Chili in South-America, he says,

“ The animals of our hemisphere not only
 “ multiply, but improve in this delightful
 “ region. The horned cattle are of a larger
 “ size than those of Spain. Its breed of
 “ horses surpass both in beauty and spirit,
 “ the famous Andalusian race from which
 “ they sprang.”

Does the human race degenerate in America? We are much interested in this question, whatever the fate of quadrupeds may be. The want of beard, in the American savage, has commonly been mentioned as a proof that he is of an inferior race of animals; or that he is greatly degenerated. “ The beardless countenance and smooth skin of the American seem to indicate a defect of vigour,

* Robertson's History of America.

" occasioned by some vice in his frame.
 " He is destitute of one sign of manhood and
 " strength."* From the Indian's supposed
 want of beard, philosophers seem to have
 inferred his want of strength, courage and
 affection for the other sex. The Indians, like
 the Tartars, and other Asiatics, from whom
 they are chiefly descended, have thin beards;
 but writers who urge their want of beard, in
 proof that they are a new race of men, do not
 consider that there are numerous tribes or
 nations in the Eastern parts of the old conti-
 nent, who, like the Indians, appear to be
 without any beard. They constantly pluck
 it out. The islanders in the South Sea have
 beards, as we are told by Capt. Cooke, but
 many of them pluck it out, or the greater
 part of it, as well as the hair from under their
 arms. Whoever takes the trouble to make
 himself acquainted with the subject, must
 think it strange that an opinion destitute
 of truth, without other foundation than dis-
 tant and hasty observation, should have ob-
 tained so general a credit in Europe.† At

* Robertson's History of America.

† The American reader who knows how little truth
 there is in such assertions, should not be in haste to crimini-

a meeting of Indians from different tribes, in the year 1796, I examined near fifty of them, and there was not, in that number, a single Indian without a beard. There were Indians of the Chocktaw, the Chickesaw, the Cherokee, the Creek, the Chipawa, and the Shawanese nations. Their beards in general were shaved, but some of the chiefs had suffered whiskers to remain on the upper

nate historians, who have propagated this opinion, as men who intended to deceive. They saw in most cases with the eyes of other men, and they argued from the report of ignorant or dishonest travellers; from the report of men who falsify the truth for the sake of dealing in the marvellous. Men there are, who, by doing little more than riding post through a country, deem themselves qualified to draw the character of soil, climate and inhabitants, under the head of travels. And if such travels do not contain marks of ignorance, malice, and a criminal departure from truth in every sheet, they are more correct than some travels in America that have lately appeared. In this case I do not refer to those libels lately published in England, by such men as Weld or Parkinson. Writers of that class do not claim attention. Their purpose may have been to prevent emigration, a desirable object when they wrote; but it might have been effected by other means. I refer to the subjects of another nation; to writers who had some rank in society. Although the man who inherits a title may not inherit either the talents or virtue of his ancestors, the public have a right to expect that he will adhere to the truth.

lip; or they suffered a small portion on the chin, to grow to a considerable length.* One of the Shawanese chiefs had strong whiskers upon his upper lip, and so had a Chickasaw and a Cherokee chief. As the Indians seem to know that they have been regarded as an inferior, beardless race of men, it is not improbable that the custom of wearing whiskers, such as we have observed, by some of their chiefs, may have originated in pride; or it may be considered as a mark of seniority and rank. A dark skin does not show the beard when shaved, but whiskers are very conspicuous. The habit of shaving is modern, among the Indians, and such is probably the use of whiskers, for the ancient custom was to pluck out the beard. It was pulled out by the finger nails, as some of them allege, and others of them describe other modes by which it was extirpated. The tedious hours of an idle savage, setting

* Lawson, speaking of the Indians on a branch of Clarendon river, in North-Carolina, in the year 1706, says, "Most of those Indians wear mustochios, or whiskers, which is rare, by reason the Indians are a people that commonly pluck the hair of their faces, and other parts, up by the root, and suffer none to grow." *Lawson's History of Carolina.*

on the ground, more than half his time; without work, without books, without converse, and almost without thought, must have been relieved by the frequent and trifling exercise of plucking the beard. And it is not improbable that the desire of some employment, which required little motion, and little exertion of the mind, gave rise to that other absurd, but very common practice among savages, tatooing, or marking the skin by various paints and figures. It appears strange, at first sight, that a custom so unnatural as pricking the skin, and marking it with different paints, should prevail among the savage nations in Africa and Asia, in the South Seas and in America. The Arabs mark their lips, as well as the arms and body, with blue paint.* Customs like these, which originated in whim, or rather in the desire of relieving tedious hours by some employment, produce a considerable change in the external form: and that adventitious form is soon regarded as a criterion of beauty; it becomes general in the nation. The Indi-

* Pietro della Valle. The savage mountaineers in the kingdom of Ava, in India, disfigure themselves by tatooing.

ans, like the Tartars, frequently cut the hair from the greater part of their head. This custom was prior to the use of scissars among them. Some old Indians whom I consulted on this subject, allege, that their ancestors, not having sharp instruments, had recourse to fire: such is their tradition, for removing the hair. They singed it off with a live coal of hickory, or some other hard wood. Those observations, on the subject of beards, perfectly agree with the testimony of other people. I have been assured by traders and gentlemen who have conversed much with the Indians, and lived among them on terms of the utmost familiarity, that Indians, in all cases, have hair, exactly as white people have it; without any difference, except that it is thinner. As their taste begins to change, from their acquaintance with white people, they are less solicitous, at present, to extirpate those hairs, which are not supposed, as formerly, to mar the beauty.

We know that women among the American Indians, are forced to perform all the hard labour that is necessary to the support of a family. The husband smokes his pipe, or sleeps in his cabin, while his wife hoes

the corn, with a child at her back. By this mark of apathy, or unkindness to his female, the American savage is supposed to be distinguished from other men. "Marriage itself, " instead of being an union of affection and "interest between equals, becomes, among them, the unnatural conjunction of a master with his slave."* The author of this remark was not unacquainted with the manners of rude nations in the old continent; and if he had sought for a satisfactory proof, that men are all of the same family, and that the disposition is not changed by an extraordinary change of climate, he would have found such a proof in the conduct of the American savage to his female.

There is no living creature on the old continent, bird or beast, that is so much distinguished as man, in his uncultivated state, by the want of kindness to his female companion. The male bird is most assiduous in helping his mate to feed their young. Some males among the beasts, when their assistance is not wanted, neglect their female; but none of them adds to her trouble, or treats

* Robertson's History of America.

her with cruelty. Man alone is distinguished by the want of kindness, and by cruelty to his female. Perhaps Russia may be the only country in which the tyranny of a husband is reduced to a system, and avowed in the marriage ceremony; but Russia is not the only part of the old continent in which the wife is a slave to her husband. The Arabian does not suffer his wife to eat with him; he would, as he conceives, be degraded by her company; but he compels her to bring wood and water, to dress his victuals, and to perform every other menial service. His sons are taught to despise their mother. She is not suffered to eat with them after they are eight or ten years old. In that ancient nation, we see the character of men, who are not perfectly civilized, as it may be traced through all shades and colours, in the old continent, or the islands connected with it. In many of the nations in Europe, who presume to call other men savages, the weak and humble wife continues to suffer under the chastisement of a master. We have reason to believe that man is the greatest tyrant upon earth. His strength is the measure of his conduct. The little despot in his family,

and the great despot on his throne, exhibit the same character. Those who are weaker may expect to smart beneath the arm of power. Women are indebted to civilization alone for the happiness they enjoy, in some parts of the world. And their situation, in every part, must be improved by the progress of knowledge. We soon discover that all permanent happiness depends on sentiment and reflection. The consciousness of giving protection and comfort to those who place themselves under our care; to those who are weaker and need our assistance, is the solace and reward of men who feel and reason: it is the source of their greatest happiness. The pleasure that arises from domestic attachments, from the constant exercise of kindness to a wife and children, cannot be equalled by all the other enjoyments in life. The greater part of our species, in the old world, have not discovered this truth. Idle and indolent, governed by passion and not by reason, they remain inexorable tyrants. If a separate race of men had been formed for America, in which animals are said to be less fierce, or less savage, it is probable that the man of America would have

been less cruel to his female than the tyrant of the old world; but his manners, on this head, give an additional proof that he is of the old family.

After stating the great resemblance that is found between the American savage, and his savage brother in other parts of the world, it can hardly be necessary to give many other proofs that they are too much alike. The American Indians are described as men who are passionately fond of strong drink. On this head they perfectly resemble the savage and half savage of the old continent. The Tartar gets drunk with fermented mare's milk: the Mahometan with opium and the smoke of tobacco: the ancient Scythians intoxicated themselves with the fumes of hemp seed: the Celtic and Teutonic nations with ale and mead: the African gets drunk with brandy. We say nothing of the modern nations that are more civilized, who, to the reproach of rationality, seem to have a pleasure in resembling beasts. Weary of decent deportment, and fatigued with the trouble of thinking, they deliberately sit down to deprive themselves of reason. The Ameri-

can savage is equally attached to drinking and gambling with his European brother.

The nations of America have been represented as men of little strength; but as they are known to be at least equal in size to those of the other continent, they may also be presumed to be their equals in strength, when they are fed in the same manner, and equally accustomed to labour. Such of them as have been employed, from Nantucket, in whaling, can hardly be matched at an oar. Activity, combined with strength, renders them excellent seamen.

The courage of the American savage has been mentioned; like his other qualities, in terms of reproach; he is said to be “plus craintif et plus lâche,”* more timid and more cowardly. The Indians make war by stratagem, but they are not therefore to be deemed cowards. They are not very numerous, for which reason they are not prodigal of life. The point of honour, with an Indian chief, does not consist in facing his enemy in the field, but in saving his own

* Buffon.

men. Such is the dictate of prudence. The Spartan youth were trained to all kinds of stealth and stratagem, that they might the better be enabled to surprise an enemy; but the Spartans were among the bravest of men. When it became proper or necessary to face an enemy, they never turned their backs. It is admitted that Indians have shown the most astonishing degree of fortitude in bearing torture. This has been called passive courage; but the same men are supposed to be deficient in active courage; and this strange conjecture is founded on their art of war, which differs from that of Europeans. The Indian secures himself in battle by a tree or some other cover. If a cover be a mark of cowardice, our ancestors, who fought in armour, were deficient in active courage, and so are the moderns, who avail themselves of trenches, or any other species of fortification. The object of an Indian chief is to destroy his enemy, with as little loss to himself as possible. Having this object in view, he avails himself of the best means in his power; nor is he afraid of reproach, while he adheres to his purpose. We have seen instances, too many, of brain-

less white commanders, who have sacrificed half of their men, in fruitless and hopeless actions, only because they feared, lest they should be suspected of the want of courage. The virtues of Fabius were not less admired, when he patiently endured the insults of an enemy, than when he met that enemy in the field. Men are less afraid of reproach, when they are conscious of not deserving it. In whatever manner the Indians may think fit to meet an enemy, they give unquestionable proofs, that they are not afraid of death. Surrounded in a block-house, without ammunition, we have known them perish in the flames, because they would not surrender and become prisoners. When I say that the Indian mode of fighting, under cover, is the dictate of policy, not of fear, I am prepared to give instances, not a few, in which they have shown proofs of undaunted courage in the open field, when the other mode of fighting could not be adopted. It is found that our woodsmen are rather an overmatch for the Indians, in correct shooting with a rifle; but our chief advantage, in disputes with the native savage, must ever consist in superior numbers, or the use of cavalry.

When America was first discovered, the natives appeared contemptible and dastardly, from their want of arms. A white man to an Indian was then a giant to a pigmy; but an Indian, well provided with arms, is now become a dangerous enemy.*

By a general view of the human race and its varieties on the old continent, and by comparing those people with the original inhabitants of America, we must be convinced that men are all descended from the same stock, and that America was peopled from the other continent; but we have no information concerning the time in which the first colonists were transported. The great extent of population in America, when Columbus made his discoveries, about three hundred years ago, is a sufficient proof that many years had elapsed since the aborigines had come to this continent; but the modern date of the largest and most populous empires then existing in America, has been supposed to justify a belief, that the first settlement of America was recent, when compared with that of the other continent. At

* See proofs and explanations B.

the period to which I refer, America was settled in all directions, from north to south, although no part of it was fully peopled; nor had any progress been made in those arts, which are the fruit of necessity in old and numerous societies. Those circumstances, however, can neither be urged in proof of a very ancient nor a very recent settlement. Migrations, in the old continent, have lately been the effect of a crowded population; but migrations in America sprang from a different cause. The first adventurers, who were little attached to their native soil, could hardly be attached to a particular part of the land they had discovered. Sustaining themselves without labour, in a country that abounded in game, they acquired habits of idleness. When the game became scarce in one part, they removed to another. The same spirit produces the same effects, among the present white inhabitants of North-America. The more adventurous, more fickle, or more indolent, move to the frontiers, and settle upon new lands. When the range is impaired, or the game diminished, those very men, or their children, move onward, and follow the

range; for they raise little corn, eating flesh instead of bread; whence their habits of idleness become inveterate. As the ocean yields a supply of food, that is more easily caught than birds or beasts, it follows that the sea coast was first explored; but the greater number of inhabitants were found in warm or temperate climates; because in such climates the means of subsistence were easy. In this manner every part of America may have been visited, and sparse settlements formed, within a few centuries after it was first discovered. In this manner too, as we are taught by civil history, the other continent was originally settled. The first migrations were not the effect of a crowded population; they were caused by a rambling or adventurous temper. Every country was first visited by single families, or by small parties, who migrated in the spirit of ambition, discontent or caprice, from young colonies or new governments. We have the names of men on the other continent, who were celebrated as the founders of government; but those men, in every case, appear to have found a weak, unconnected race of savages, scattered over the country in

which they fixed their empire. Cecrops was not the first man who discovered Attica. When Taut removed a colony to upper Egypt he found people there. Rama, who founded the Indian empire in Asia, was a conqueror; he must have found people to contend with. When we turn our inquiries to empires that are more recent or better known, we find the same difficulty in determining who was the first settler. We can mark the time when there were not many people in Great-Britain or Ireland, and we can trace colonies, to the island last named, from Greece, Carthage, Spain, and Britain ; but we have no evidence, by which we can determine, who were the first settlers. They certainly did not migrate from a crowded hive, whoever they may have been. When the small tribes, who first settled in America, had destroyed the game in one place, they removed to another without difficulty or opposition ; but in the process of time, migrations were not effected without trouble, for all the country was claimed as hunting ground by one tribe or another. In that case hostilities commenced, and men were destroyed, that bears and buffaloes might

have room to breed. The failure of game caused the Indians, in some cases, to turn their attention to agriculture : and it appears that successful chiefs, in the usual spirit of domination, in some cases, extended their authority, by adding weaker tribes to their respective empires. In this manner, the monarchs of Peru and Mexico were extending their domains, when the Spaniards visited this continent ; and in this manner, the greatest empires formerly sprang up in the other hemisphere. But Mexico and Peru may have been well peopled, many a century before there was a monarch in either of those countries.

It has been observed that the American savage, passing over the shepherd state, was turning his attention, in some instances, to the cultivation of the soil. From this circumstance, it has been alleged that he differs greatly from the man of the other continent; but this inference is not correctly deduced, for it is known that the introduction of new arts and customs is frequently to be ascribed to what is called pure accident. The casual discovery of gunpowder in Europe gave rise to a variety of new customs,

and to the neglect of old ones. The introduction or discovery of a grain, that was easily cultivated, may have promoted agriculture; or the want of the most useful domestic animals may have caused the employment of a shepherd to be forgotten. The use of cows, sheep, and goats was known to the first family upon the other continent; and that family was also instructed in the art of cultivating the earth. The first emigrants from the original stock were equally instructed in the several arts of tilling the earth, tending cattle, and killing game; but as men always prefer the most easy mode of living, they would support themselves, for many years, by hunting alone; for in new countries, where there is any winter, a family is most easily supported by hunting and fishing. When the game failed, they had recourse, in every case, to the other most easy mode of living, to the care of cattle; for the colonists, who were never separated from the parent state by an ocean, could easily obtain a supply of cattle, when they needed them. In the progress of population, when pasture failed for cattle, they had recourse to agriculture. Thus it

was, that the shepherd state commonly succeeded the chase, and that again was succeeded by agriculture. This succession did not, for it could not, take place in America. The first planters brought with them the usual stock of knowledge, but they brought no cattle. They brought the maize,* as I

* Although maize and tobacco are both commonly supposed to have originated in America, there is much reason to believe that both those plants were carried from Asia, by the original emigrants. I suspect that the Esquimaux Indians, when first discovered, had not the use of maize, for their ancestors came from a part of the other continent in which that grain is not cultivated, but it is cultivated in Asia. "The inhabitants," says Labillardier, "sold us ears of maize, still green, which had been boiled." This was in one of the Molucca islands. Tobacco, as we are told, is cultivated by the natives in the vicinity of Nootka Sound. But tobacco is a tropical plant. The seed must have been imported from Asia. The Chinese, who seldom change their habits, have long been smokers of tobacco. Certain nations in India, beyond the Ganges, are slaves to the use of this nauseous plant. The inhabitants of the island Sagaleen, about the 49th degree of latitude, are also perpetual smokers of tobacco. We are told by La Perouse, that "they have good large leafed tobacco, "and the pipe is never out of their mouths." They are supposed to purchase their tobacco from the Tartars. It has also been observed, that the Tartars on the continent, nearly opposite to that island, are enslaved by the use of tobacco. "Every male of them, young and old, wears a leather girdle, to which are hung a little pouch for to-

presume, that we call Indian corn, for it is said to grow in Asia. If they wished to raise cattle, they could not obtain the species to which they had been accustomed, but they could raise corn, for they had the seed: hence it was, that in all cases some degree of agriculture immediately followed the habit of living by the chase.

The annals of the American savage, like those of every other nation, have been corroded by the rust of time. When we speak of the epoch in which they arrived, we find ourselves travelling in the regions of conjecture, having few marks, and those very obscure, to direct our course. We discover nothing that may be deemed certain, except that they came, the greater part of them, from Asia, and that the time of their arrival is very distant.

While it was presumed that America was separated from the other continent by an ocean of considerable extent, various opinions were formed respecting the manner in

"bacco and a pipe." It is not to be supposed that all those nations, so distant and lately discovered, imported their tobacco, or its seed, within the last three hundred years, from America.

which this continent had been peopled; for the ancestor of an American savage, in his canoe, could not be supposed to have adventured far upon the ocean; but the discoveries of late navigators have removed all difficulties on that head. We learn from Capt. Cooke and others, that Asia is not far distant from America. They may be seen, at the same time, from a ship in the middle passage.* It has also been discovered, that all the little islands, between the northern parts of Asia and America, are inhabited by savages, who must have wandered from Asia; and it is not to be supposed that a similar race of men did not travel to America. In a word, the descent of the North-American Indians, or the greater number of them, from Asiatic Tartars, or their progenitors, is now so fully established, that I shall not exercise the reader's patience, in showing how much they resemble one another in their features, their scantiness of beard, or their language; but the Tartar did not transport his horse, and the want of that animal has caused many shades of difference in their habits.

* The distance is not above thirteen leagues.

In stating that the aborigines of North-America are chiefly descended from the Tartars, or from the same stock with the Tartars, I am supported by common tradition* among those people, as well as by the obvious facility of the passage. But some of the northern Indians, as I suspect, emigrated from Europe. It can hardly be questioned that the Esquimaux Indians are the diminutive sprouts of Norwegian ancestors.† It is fully ascertained, that colonies from Norway settled in Iceland and Greenland near one thousand years ago; but the first adventurers who are mentioned in history, found a race of savages who had preceded them.

The same adventurers who discovered Iceland, at the period to which I refer, extended their travels to the Labrador coast, where they found a race of savages, who appeared also, by their language, to have emigrated from Denmark or Norway. When we consider the distance of Iceland, Greenland, and the Labrador coast, from the British isles,

* The Indians in general in this part of America allege that they came from the north-westward.

† See proofs and explanations C.

or the northern parts of the continent, the difficulty and danger of navigating the northern ocean, in high latitudes, and the contemptible vessels now in use among the Esquimaux, it may appear strange that every island, and every spot of land in those inhospitable regions, should have been discovered and settled at the time to which I have referred. This phenomenon is best accounted for, by recollecting that there must have been a time in which the northern ocean was navigated with less danger than at present; when Iceland, Greenland, and the Labrador coast were much more hospitable, the soil more productive, and the climate more temperate than they are at present. This allegation may appear somewhat paradoxical, when it is compared with a former observation, that the winter's cold has been gradually decreasing for more than 2000 years, in the greater part of the world. The fact, however, is not to be disputed. The natives of Labrador, from their want of letters, can give us no account of the change that has taken place in that country; but the case is very different in Iceland. The inhabitants of that island have preserved

their history for nine or ten centuries, and the change of climate there has been fully established. I do not say that the numerous population of Iceland, near one thousand years ago, or the flourishing state of arts and sciences among those people, at so distant a period, is to be taken for a proof that the climate was formerly more temperate, and the soil more productive than at present; although they add great probability to this opinion; but we find an argument in the natural history of the island, that seems to be absolutely conclusive. It is not to be disputed, that in former ages Iceland produced timber in abundance.* Large trees are occasionally found there, in the marshes or vallies, that have been covered to a considerable depth in the ground. Segments of those

* It is asserted in the ancient Icelandic records, that when Ingulf, the Norwegian, first landed in Iceland, anno 879, he found so thick a growth of birch trees, that he penetrated them with difficulty. Some modern historians, knowing that no trees of any kind grow at present in that island, have expressed their fears lest the veracity of the ancient annalists should be suspected. If they had known that trunks of trees have lately been found in that island, buried several feet deep in the earth, their fears would have been obviated.

fossil trees have lately been exported from the island, in proof of the fact alleged. But we are equally certain, that in the present age timber does not thrive in the island. Its growth is prevented, or the plants are destroyed by the intensity of the winter's cold, as in the northern extremities of Asia and America, where nothing but shrubs are to be found. The same pejoration of climate, and a similar degeneracy in the productions of the soil, have certainly taken place on the Labrador coast that have been observed in Iceland.

This remarkable increase of cold in high northern latitudes, may be accounted for by reference to a general deluge, the flood of Noah. I am aware that allegations, in natural or civil history, are not to be supported by referring to a book whose authority is disputed; but, in the present case, I must be permitted to allege the certainty of a general deluge, provided it will account for the several phenomena, and provided those phenomena cannot otherwise be accounted for.

Upon the supposition of a general deluge it will be admitted, that immediately after the flood there could be no ice in any part

of the ocean. The waters in the northern regions were exactly of the same temperature as the waters in other parts of the ocean, for they had the same origin. The fountains of the great deep were broken up. The temperature was thirty or forty degrees above the freezing point. In that case, the air in Iceland, or upon the Labrador coast, coming from the temperate surface of the ocean, was temperate and pleasant. Vegetation in the long days of summer was vigorous, and the winter was not sufficiently cold to destroy perennial plants. In the process of time the waters near the pole lost a great part of their heat, and ice was formed in the creeks and bays. Large cakes of ice were occasionally broken off by storms, and detached from the shore. As the temperature of the ocean decreased, some part of the broken ice continued to float through the summer. Every succeeding year added to the size of the floating masses.* They were

* It is a curious fact, and in perfect coincidence with this theory, that when the first Norwegian colony settled in Greenland, about one thousand years ago, they found no difficulty in approaching the coast, and a regular correspondence was supported with those people for many years.

increased by rain, by snow, and by the spray of the sea. The northern ocean is nearly filled at present by those floating islands of durable ice. The summer winds that reach the coast, instead of being tempered, as formerly, by a watery surface, are now chilled by mountains of ice; and they are become so intensely cold in winter, as to be destructive of animal and vegetable life.

It may possibly be alleged, that in the space of three thousand years, the time that passed between the flood and Ingulf's arrival in Iceland, the atmosphere should have been as cold, and the accumulation of ice as great in the northern ocean as they are at present. It is readily admitted, that when we consider the present degree of cold which prevails in high latitudes, we conclude that a few years

That intercourse was entirely neglected during the dark ages of anarchy and misrule in Europe. Since the revival of learning, within the two last centuries, sundry attempts have been made to discover the remains of that colony, who lived on the eastern part of Greenland; but no landing can now be effected on that coast, by reason of the vast bodies of ice with which it is pressed. From this it is clear, that within the last seven or eight hundred years there has been a great increase of ice in high northern latitudes.

would be sufficient to produce vast bodies of ice. But we are to consider, that in the case referred to, the water in every part of the ocean was tepid, and the whole face of the earth was of the same temperature with the water; whence it followed, that the atmosphere could not be cold, nor could there be ice or snow in the longest nights of winter. We have no data by which we may compute the number of years or ages that were necessary to abstract so great a body of heat as then existed in the northern lands and ocean; but a long period must have been required, for there is no fact in natural history more certain than that there was more heat, or less cold, in high northern latitudes, in the eighth or ninth century, than there is at present; nor is it clear that the heat of the air, earth, or water, in those high latitudes, has yet attained its lowest degree.*

By keeping in mind that there has been a time in which the climate was temperate, and the soil, for the same reason, was pro-

* Vast bodies of ice from the northern seas are thought to have become more dangerous of late to navigators, near the banks of Newfoundland, than formerly.

ductive in high northern latitudes, we are enabled to account for many phenomena which had appeared very enigmatical. We are no longer surprised that any part of our species should have migrated and settled themselves willingly in Lapland and other regions near the arctic circle; in regions from which nature, in the present age, seems to shrink with horror. Those countries, as we conceive, were all of them settled while the climate was temperate and the soil fit for cultivation. As the miseries that are caused by cold weather and a frozen soil increased, the habits and constitutions of the inhabitants suffered a considerable change, and they became attached to the land of their ancestors. They now live, or seem to live contented, in a country to which criminals are banished as one of the severest punishments.

By attending to the above stated changes in soil and climate, in high northern latitudes, we can easily discover how it should have happened that Norway contained a crowded population above one thousand years ago, and sent out colonies.

By attending to that change of climate, in high latitudes, we can easily account for

incidents that have excited general attention twelve or fifteen hundred years ago. We discover how it happened that certain countries, which at present are not very desirable nor productive, had formerly been the *officina gentium*, the very nursery of nations; and why, in the process of time, it became necessary for those very people to migrate by thousands in quest of better habitations.

The rude and barbarous state of the aborigines, in every part of America, has been urged in favour of a recent establishment; but there are facts that argue a state of ancient civilization, among those people, greatly superior to what we find at present. As the natives of Mexico were the only people in North-America who had any pretensions to learning, when this country was discovered by Columbus, our knowledge of Indian history is chiefly derived from those people. The outline of their history deserves our attention, as it has been drawn by the Abbe Clavigero, who was born in Vera-Cruz, lived thirty years in New-Spain, was master of the Mexican language, and had studied their historical paintings and other monuments of antiquity.

The Toltecas were the first people claiming the notice of history, who settled in Mexico.* Those people came from the north-westward, having been expelled by their own countrymen. They had been one hundred years in coming, for they halted at sundry places, where they cleared ground, built houses, and planted corn and cotton for their sustenance and clothing. Having attained the 20th degree of latitude, the soil being fertile, and the climate pleasant, they built a city near the lake of Mexico. Their government lasted 384 years, from the building of that city, which was about the year 600 of the Christian era. The Toltecas were not a military nation, but they had made considerable progress in useful and ornamental arts. They supported themselves by agriculture, and had the art of engraving precious stones, and that of working in gold, silver, and copper. They also possessed an art, that is lost in Europe, the art of making instruments of copper durable and hard, as instruments of steel. They made hatchets

* They were not the first people who arrived in Mexico, for there were savage woodsmen before them.

of copper, and other instruments of husbandry. Those people had also made considerable progress in the profound study of astronomy; for having discovered that the civil year was six hours shorter than the solar year, they had corrected the defect by adding an intercalary day to every fourth year. This correction of the calendar was made about five hundred years before they migrated from their original settlement. It is somewhat remarkable that the Romans corrected their calendar about the same time. This peaceful, industrious, and learned nation was nearly exterminated by famine and pestilence, occasioned by the want of rain. The greater number of the survivors, in small parties, fled to different parts of the continent.

The Chechemecas, at the interval of one hundred years from that period, settled in Mexico. This was a savage nation, that lived entirely by hunting. The Chechemecas were followed by other tribes, who came also from the northward, with the desire of settling in that delightful country. The Aztecas, who have since been called Mexicans, were among the most noted of those

emigrants. They arrived about seven hundred years ago. This nation is supposed to have retained some of the learning of their ancestors, for they understood hieroglyphical writing; but they had degenerated, like the greater part of the human race, upon the other continent, into the most gloomy superstition and barbarous idolatry.* They made a wooden god, whom they worshipped; and when they became powerful, they sacrificed their prisoners, by thousands, to that abominable deity.

From this sketch of Indian history, we are induced to believe, that the first adventurers to North-America were composed of artists and husbandmen; that their posterity, for many ages, cultivated the arts in the place in which they first settled; but there was no extensive tract of fertile land in that part of America, wherefore small colonies issued from the parent stock, who supported themselves by hunting, and in a short time be-

* It may be questioned whether this barbarous nation brought with them any knowledge of astronomy and hieroglyphics. It is more probable that they were instructed in Mexico, as the Chechemecas had been instructed, by the remnant of the Aztecas.

came savages, as in every other part of the world. It appears also, that the Toltecas, who lived many ages in the original American settlement, were confirmed in their habits of industry and peace; for which reason they migrated, and they alone seem to have migrated in the spirit of civilization, to search for a better soil and climate. Perhaps it would be vain to inquire for the original settlement of those people; to search for a tract of land, in that part of America, where they may have cultivated, spun, and wove the cotton whose seed they brought from Asia,* although the temperature of the winters in high latitudes, as we have seen, was much

* As neither cotton nor maize thrive at present in high latitudes, it may be objected that the aborigines could not have brought the seed of those plants from Asia. But though the passage by Kamtschatka is very short, I do not conceive that the first emigrants came that way. They came, as I suspect, from a warmer climate. Whoever examines the Pacific Ocean, from the latitude of 40 degrees on the coast of Asia, to the latitude of 50 degrees on the coast of America, must discover a chain of islands extending from Japan, or Jesso, to this continent, with little interruption. The Black Fox islands are nearly in sight of one another, and it is not improbable that other islands have disappeared, by which the original chain was perfected. I deem it highly probable that the first emigrations were made from Asia by those islands.

more pleasant three thousand years ago than it is at present. I do not mention a period so distant, because the Tolteca chronology goes back so far. I mention it because I am persuaded that the human race, or many of them, a short time after the flood, were possessed of more knowledge; that they were better acquainted with agriculture and the mechanic arts, than the bulk of their posterity fifteen hundred years after that time.

In expressing my persuasion that the human mind has, at any time, been sinking instead of progressing in knowledge, I am aware that I differ from the common opinion. But as my ideas on this subject are essentially connected with the general history of the American savage, I deem it proper to explain them in a few words.

When I speak of the common opinion, I do not refer to that of Epicurus, Lucretius, or other philosophers, of that class who allege that men spring from the earth, like seedless plants, being engendered by moisture and heat: for if men had originated in that manner, they must have been ignorant and brutish, as the greatest infidel can ima-

gine. I refer to the fashionable opinion of a numerous class of modern philosophers; to the opinion of men who have attempted, with great ingenuity, to account for the origin of language; to the opinion of men who have told us when and how it was that the human race began to discover the use of things, to think and to speak. Philosophers of this class have presumed that man came from the hands of his Maker a brute of the lowest grade; a biped without language and without knowledge. How strange the dream! That man, who was to be the head of a rational family, a moral agent, and a candidate for immortality, should be turned into the world, without the knowledge of virtue and vice, without ideas or the means of communicating them. According to those philosophers, every beast of the field was created more perfect than man, for each of them had all the knowledge that was proper, all that was necessary to their comfortable subsistence. Is it not infinitely more probable that the first man received, by the inspiration of the Almighty, all that useful knowledge which his posterity were to receive by education; that he began his race, not in a

state of infancy, but of manhood? Upon this supposition it would follow that his language was not less perfect, or less correct, than any of its subsequent derivatives. Be this as it may, no man will dispute, that before the deluge, if such an event be admitted, the human race were fully instructed in useful arts. It must follow that Noah and his sons, who lived long in Persia, at no great distance from the river Euphrates, were proficients in the arts and sciences; but their descendants, in every succeeding generation, as their lives were shorter and their habitations more dispersed, decreased in knowledge. As this observation has a direct reference to the Mosaic history of man, I should not have stated it in this place, as a conclusive argument, unless it could be established, beyond the colour of dispute, that there has not been a nation on the face of the earth, having any pretences to learning, that has not been indebted to the very persons I have described, or to their descendants, in or near Caldea, for the rudiments of their learning. But of this I shall speak more fully hereafter, for the allegation above stated claims our present attention. Is it true,

is it probable, that the human race are naturally disposed to increase in knowledge? On the contrary, is it not clear that they possess a certain aversion from labour of body or mind? We have daily proofs that the children of savage parents resist education. Those who have been trained for years in our colleges, and instructed with the utmost attention, escape, when their literary course is finished, like birds from a cage, and return with greediness to a savage life. But the children of civilized parents, who have been captives, a few years, among the Indians, seldom fail to become perfect savages. The effect of habit is alike on either side; whence it follows, that a life of indolence and ignorance is seductive. The theory of those philosophers is neither supported by personal observation, by tradition, nor by history. What progress have the Africans made in the course of three or four thousand years? There was a time in which the Ethiopians possessed a considerable degree of knowledge: it has long since disappeared. Have the Tartars made any progress in civilization? They are more ignorant at present than they were three thousand years

ago, if any credit may be given to the most ancient historians. The Pelasgi, a learned nation, were Scythians. I say nothing of the savages in the polar regions, whose exertions may be chilled by extreme cold; nor of the numerous savages who have lately been discovered in the South Sea. They do not justify a belief that the human race is naturally progressive in knowledge. Let us consider the nations who have been distinguished by their learning; they never were numerous. The Chinese have been a learned nation; they have been proficients in useful arts from the remotest ages recorded in history. The Hindoos were also distinguished by their learning, at a period equally remote. Have we any reason to believe that either of those nations was self-taught? The Hindoos, instead of progressing, have not been able to preserve their learning, and the Chinese seem to be the preservers, not the inventors, of a single art. The Egyptians are said to have imported their learning from Ethiopia; but Pliny says, with more probability, that they were chiefly indebted to the Babylonians. It is more than probable, as we shall show in another place, that each of those

nations was indebted to the immediate descendants of Noah, for the rudiments of astronomy and useful arts. There are not many instances, in which colonies have migrated from a polished nation, without degenerating. In some cases they have lost part of their learning, but in many cases they have become savages. Is it a wonder that the original Americans had become savages, especially when we consider, that they had not the same opportunity as colonists upon the other continent, to travel the backward path, and recover what they had lost? It may possibly be alleged, that according to the sketch here given of Indian history, the human mind in America has been in a state of constant degeneracy, the very position to which I had objected; but this consequence does not follow. When I allege that the human race do not degenerate in America, I refer to the native powers of the mind. They are not impaired by the soil or climate of America. In that position I have no reference to the effects of habit and education. By education alone, the sage is distinguished from the savage. We also contend that similar circumstances have ever produced the

same effect upon the other continent, which they have produced in America. It is known that detached colonies, who supported themselves by hunting, have never failed to degenerate. It is also known that war has a direct tendency to extinguish the light of science. The subjects of the Roman empire, by a succession of wars and revolutions, for the space of six or eight hundred years, from a state of great improvement in arts and sciences, had nearly become savages. The knowledge of letters was disappearing among the higher order of men, and the night of ignorance had nearly overtaken them. The empire of reason, like other empires, has its decline and fall, its summer and winter, its day and night.

Is it not strange that any historian or philosopher should have alleged, to the reproach of America, that the human race degenerate there, since it is fully established that they degenerate in every part of the world, in the like circumstances; that is to say, under the ravages of war, revolutions in government, and tyranny of despots? The habits and manners of every nation take their form and impression from the spirit of

the government under which they live, or from the administration of that government. They are diligent or indolent, ignorant or well informed, according to the privileges they enjoy. The very consciousness of being free, excites a spirit of enterprise, and gives a spring to the intellectual faculties. Few men will devote themselves to intense study, who cannot with some degree of safety, communicate their opinions; nor has it been observed that men were ambitious to excel in the fine arts, who could not cherish the hope of reward. But in all governments, where the tenure of property is uncertain, the rewards of diligence are counted as a dream. Hence it follows, that the increase of science in every government, has been proportioned, in a considerable degree, to personal liberty, and the safety of property. There was a time in which the Egyptians were learned, when compared with the surrounding nations. But the Egyptians had a stable government, and the tenure of property, for many ages, was secure in that nation. Egypt, since that time, has been conquered once and again. Those people have lived above two thousand years, without

property or personal safety, and they have long been a race of ignorant slaves. The Hindoos, or one of their classes, had long enjoyed a great degree of wealth and personal freedom; during that period, they were eminent for learning. They were afterwards visited by northern conquerors; they were plundered, and felt that they were no longer free. What was the effect? The present race of men, who are called learned, do not understand the principles of their ancient learning. We are much better acquainted with the history of Greece than with that of Egypt or India. Let us for a minute attend to that cradle of genius, and nursery of the arts. The Grecians were capable of great exertions both of body and mind.* Their climate was superior to that of Egypt or India; but they enjoyed a greater advantage; their government was perfectly free.

* The great difference that was observed between the Athenians and the Spartans, in every mark of intellectual powers, could not be caused by any difference in their origin, language or climate; it was entirely caused by the different spirit of their respective governments. The government of Athens was perfectly free; but the military discipline of Sparta was in a state of constant enmity with science and the liberal arts.

What was the consequence? We know that the Grecians, in a few centuries, far surpassed every other nation in science and in arts. They were great in every thing they attempted; but the progress of knowledge in the Grecian republics, was checked by the sword of Alexander; it was destroyed by the legions of Rome. As the leaves of a sensitive plant shrink from the touch of man, so does science shrink beneath the sword of a tyrant. At this hour we neither find genius nor learning in Greece.

After this short view of Egypt, India, and Greece, it can hardly be excusable to speak of America as a country in which the intellects of the human race sink into a pigmy form. No man will say that Greece is a country in which the human race naturally degenerate. The birth place of Homer, Pindar, Demosthenes, Hypocrates, Zeuxes, and Apelles, cannot be mentioned as the grave of genius; but the inhabitants of that region have no pretensions, at present, to any superiority over the American Indians. It appears from every light in which we have been able to view the subject, that a certain degree of political liberty has always

been necessary to the increase of learning ; for it is absolutely certain that conquest and subjection have never failed to depress the intellectual powers, and extinguish the light of science.

“ Jove made it certain, that whatever day
“ Makes man a slave, takes half his worth away.”

The time may come in which the inhabitants of Europe, in its most enlightened parts, shall again be compelled to grope their way in the night of darkness. If the sword of a despot should ever be stretched over their heads, their intellects will not fail to suffer an eclipse.

It may possibly be conjectured, that Clavigero, Boturini, and other Spanish writers, did not comprehend the true meaning of the hieroglyphical writings, or the historical paintings of the primitive inhabitants of Mexico; for it must be admitted, that the present degraded state of the natives renders the story to which I have alluded somewhat improbable; but that story obtains support from the discoveries that have lately been made upon the waters of the river Ohio. By those discoveries, it is clear that the In-

dians, the inhabitants of those regions, are exceedingly degenerated. They had formerly attained a considerable degree of civilization, for there was a time in which they supported themselves by agriculture, and had some knowledge of the use of metals.*

No historian that I have seen, has sufficiently accounted for the great dissimilarity that appeared between the Peruvians and the Mexicans, three hundred years ago. Those nations, as I conceive, originated in different parts of the world. The Peruvians may have migrated from the southern parts of Asia. I think it may be said, with a considerable degree of confidence, that they came from India. According to this hypothesis, if the Peruvians were not more improved in the arts than the Mexicans, they should have been, at least in their manners, less sanguinary or cruel, and they should have differed greatly in their religious ceremonies, from men who were of Tartar origin. The supposition that South-America was peopled from the southern parts of Asia, is rendered very probable by the discoveries

* See proofs and explanations D.

lately made in the southern hemisphere. There now appears to be a chain of islands that extend from the southern part of Malacca, above six thousand miles to the eastward, between the tropics. Those islands, at a vast distance from any continent, are fully inhabited. The original settlers must be traced from a distant country; for the most visionary philosopher does not allege, that a separate race of men was formed for the several islands. The artless natives of those islands perform all their navigation in canoes; it is nevertheless remarkable, that Tupeia, one of the most intelligent men in Otaheite, could tell the bearings of other islands, that were distant above twelve hundred miles.* This indicates a spirit of great adventure in men who have no decked vessels, nor the assistance of a compass. The settlement of those islands by men from Asia, for such is their origin, as appears by their language, would have appeared a more natural event, if they had been to the leeward of Borneo or the Philippine islands, but they are to the windward; regard being had

* Dr. Forster

to such of them as lie within the tropics. From this circumstance, it is probable, that those people had availed themselves of the westerly winds that prevail in the South Sea, at no great distance from the equator, during their winter months. By the help of such winds, they may have gained their easting.* Some of the tropical islands that are fully peopled, are not more than nine hundred miles from South-America. The same spirit of adventure, or the same accident, that peopled the New-Hebrides, New-Zealand, and the Society Islands, may have peopled South-America; and it would have been strange, considering the magnitude of the continent, if some cause or some accident had not thrown people upon it. We have recent proofs, that the southern ocean, within the tropics, may be navigated to a great distance in an open boat.† And the people who inhabit the small islands in the South

* The winds in latitude 17 south, are frequently at south-west; but the trade winds in the ocean seldom extend beyond the 20th degree of latitude. *Captain Cooke.*

† Lieutenant Bligh, in the year 1789, being driven from his ship by a mutinous crew, effected his safety, by sailing above three thousand miles in an open boat, 23 feet long.

Sea, must be in the practice of making long voyages in their open canoes, else they could not tell the bearings of an island twelve hundred miles distant.

In this manner the islands in the South Sea must have been peopled, if navigation and science among the Asiatics had always been in their present imperfect state: but those people are greatly degenerated; and it has become probable, if not certain, from recent discoveries, that the islands in the South Sea were settled by colonies more learned than the present inhabitants, and well acquainted with navigation. By the extensive intercourse lately established between Europe and the Indies, it is ascertained that the Hindoos were formerly great proficients in mathematical knowledge. The world is indebted to them for decimal arithmetic; and they were for many ages better astronomers than could be found in any contemporary nation. They were bounded by the ocean, understood the principles of navigation, and were capable of conducting vessels to any part of the world; but they were natives of a warm climate, and would be the less disposed to visit high latitudes,

and cold regions. They knew in what latitudes they should search for easterly or westerly winds; and by those men, the South Sea, in all the warm or temperate climates, was fully explored. Such are the opinions that presented themselves, whenever it was known that the inhabitants of Asia, between the tropics, were good mathematicians and astronomers; but we are now assured that such reasonings on the subject are not chimerical; for a probable inference has become certain by modern discoveries. We are told by late navigators, that the language of the Malays is spoken by people in general, who inhabit the tropical islands in the South Sea. By this circumstance alone, their descent is fully established; and from this it appears that there was a time when those people were versed in the practice of navigation. When I say that the islands in the South Sea were peopled from the southern parts of Asia, and were peopled by men well versed in navigation, the present ignorance of those people cannot be urged in opposition to that hypothesis. Those islands were certainly planted many ages ago; a length of time in which they may have lost,

or rather they must have lost all traces of science, considering the limited knowledge of the original colonists,* their want of metals, their detached small societies, and the absence of every motive, by which the exertions of body or mind are usually excited. It is fully ascertained that the most learned men in India, at this day, do not understand the principles of their own astronomy. Science has forsaken that oppressed nation; but we are left to conjecture when it was that the cloud of ignorance began to thicken over their heads. Learning received a fatal wound in that empire, about one thousand years ago, when the Arabs conquered the greater part of India. But there is reason to believe that the Hindoos had attained their utmost perfection in science, many ages before the Arabian conquest. The most active and most numerous class in that nation were prohibited, by their religious institutes, from reading the Sastras, the sacred books; nor is it probable that they had

* Learning amongst the Hindoos was chiefly confined to the Brahmans or Priests, but the Brahmans were prohibited by the precepts of their religion, from migrating. The colonists were all of an inferior class.

many other things to read, in a country where books were not printed. The Brahmans, who were the learned class, had not any farther incentive to industry, nor object of ambition. They had completely established their tyranny over the minds of a deluded nation. Having power and riches in their hands, indolence and ignorance followed in their train.

When we discover that the inhabitants of the parent state, in a great and populous empire, have long since degenerated and sunk into ignorance, although they had all the necessary means of preserving their knowledge, we cannot be surprised that the colonists, less informed, and dispersed as they were, should be found in a degraded state. I have said, that South-America may have been settled from India, and when we consider the great distance to which those people extended their navigation, visiting many little islands, and planting colonies there, we cannot reasonably suppose that they did not also reach the coast of America, as it lies in the same direction, and is infinitely more extensive. It has also been observed, that as the inhabitants of India were, many of

them, good astronomers, well acquainted with the principles of navigation, and nearly surrounded by the sea; they must have turned their attention to navigation; because all nations, in proportion to their knowledge, or their situation, are known to have tempted the ocean. This at least was a natural inference; but we have direct proofs that the Hindoos were deeply concerned in maritime commerce. In the Vedas, that are supposed to contain all knowledge, human and divine, there is an ordinance regulating the interest that may be taken for money, in all cases, with an exception in favour of mercantile *adventures at sea.** This exception is necessary to the protection of commerce, and it is sanctioned by the experience of all commercial nations: though it did not find a place in the code of British jurisprudence before the reign of Charles the First. No such law could have been made in a nation that did not experience the need of it. And a nation, thus concerned in extensive navigation, has never failed to establish colonies. From this detail it is highly probable, that the Peruvians were

* Sir William Jones's Dissertation on the Hindoos.

a colony from the southern part of Asia; but there are other facts by which it is rendered nearly certain, that they traced their descent from a branch of the Hindoos. The emperors of Peru were descended, as they alleged, from the sun; and the incas, or royal family, would never contaminate their blood by intermarriages with other families. The worship of the sun originated among the Persians; thence it was brought to India. From India, it seems to have passed with the first colonists into Peru; for the sun was the chief object of religious worship among the Peruvians. It was doubtless understood by some of those people, that their ancestors worshipped the sun; and the man who obtained the chief rank among them, which he acquired by superior talents, would naturally desire to entail that rank on his family. For this purpose he adopted the most happy expedient. He traced his descent from that divinity whom their ancestors worshipped. He did more, he traced his descent from a long race of kings, by whom their ancestors had been governed; whence it followed that he had a divine right to govern. Whoever his ancestors may have been, he ventured to assert,

and his subjects believed that he was of the royal family; a descendant of the sun. We are taught by the Vedas, that in every day of Brahma, which is four thousand three hundred and twenty millions of years, fourteen Menus, or divine persons, are vested with power to govern the earth in succession. The first Menu, who reigned in the present day of Brahma, was surnamed Swayambhuva, or son of the Self-existent. He received the Vedas, the institutes of civil and religious duties, from Brahma himself. They are of great antiquity, above one thousand nine hundred and sixty millions of years: From him, the present family of men are descended. This race is called the Latos creation; for it was preceded by many other creations. During the reign of the seventh Menu, the earth was drowned by a flood, and the whole race of men was destroyed, except the reigning prince and his wife, and seven pious men, who were saved with him in a large vessel. This Menu was surnamed Vaivaswata, or *child of the sun*. Ten children were born to him after the flood. Ila, one of his daughters, married Buddha, who was the son of the moon. From the oldest

son of Vaivaswata, and the oldest son of Buddha, two royal families descended, who reigned in different parts of India. One family were called children of the sun, the other were children of the moon. Roma, who reigned in Ayodha, was the last king of the children of the sun who reigned in the silver age.* He is said to have promoted navigation and commerce, and he was more distinguished by his military achievements, than any other prince in that empire. His name is revered among the Hindoos, and, like Jupiter or Saturn of the Greeks and Romans, he is worshipped by them as a deity. Sita was the chaste, but unfortunate wife of Roma; for she had been forcibly carried off by a giant, and established her chastity by

* The Brahmans allege, that 360 years of mortals make one year of the gods, and 12,000 of those years make a divine age, and 1000 divine ages, make one day of Brahma. One divine age, or a period of 4,320,000 years, constitutes four human ages, viz.

The age of gold, 1,728,000 years.

The age of silver, 1,296,000 years.

The age of copper, 864,000 years.

The age of clay, 432,000 years. We are now in the age of clay, or age of misery, that seems to have begun a little more than 1000 years before the Christian era.

the fire ordeal.* The chief festival among the Peruvians, was called Romasitoa.† This appellation includes the names of Roma the sun-born Hindoo prince, and Sita his wife. We can hardly derive a clearer proof that the Peruvians were a colony from India. The different Hindoo casts or classes, were not found in Peru, for the whole colony doubtless belonged to one class. The Chinese are said to have descended from the military class. It is probable that colonists, who traversed the ocean, were entirely of the mercantile tribe, the Bhyse class.

The emperors of Peru, though they were not descended from the sun, gave better proofs of their divine right to govern, than any other race of princes, recorded in history. They were the parents of their people, not their masters, tyrants, and scourges. That happy soil and climate has produced a phenomenon, which is without a parallel in history; a superstitious nation, who were not cruel; a despotic prince, who was not a tyrant.

* The ordeal by fire of Ila, is celebrated to this day among the Hindoos, in dramatical exhibitions.

† Sir William Jones.

Every thing we know concerning the original inhabitants of South-America; their progress in arts, the gentleness of their manners, and the fabulous origin of their princes, tends to establish a belief, that they were descended from a nation more civilized than the Tartars; that they were from the southern parts of Asia.

Hitherto our attention has been turned to questions in which we are interested as Americans. In the course of these inquiries we have not seen any reason to believe that the frigid temperature of our atmosphere is impressed upon every animal production; nor have we discovered that any vicious combination of elements prevents the expansion of man and beast, and causes them to degenerate. Neither have we any reason to believe that a new and inferior race of men was created for America. On the contrary, the arguments by which America, and the original men of America, have been degraded, are so badly supported by observation or reason, that we are induced to look for some powerful motive by which certain historians and philosophers, elegant writers and men of genius, could be seduced from

their usual attention to facts, and their habits of correct reasoning. The pride of discovery may have tempted some writers to find what does not exist, a new race of men. The pride of country may have induced others to regard their own climate and their own complexion, as having no rivals in nature. Other historians, without sinister views, may have yielded to a fashionable opinion; but the prevailing motive with certain writers, appears to have been a desire to subvert the Mosaic history, and with it the Christian religion. This desire is not concealed by the gentlemen to whom I refer, as they have occasionally digressed from the original subject, for this very purpose. Does the historian give us "Sketches of the history of man?" Does he give us "The political and philosophical history of settlements, and trade in the Indies?" Or does he contemplate the ruins of a splendid city?* The Christian religion is constantly in his way; it must be assailed, or he seems to have written in vain. Is it the loye of truth that induces such men to wage constant war against the Christian faith?

* Kames, Raynal, and Volney

There are a thousand errors in which the greater part of our species are constantly wandering; but those philosophers are little disquieted by that consideration. How does it happen, that a single error, which is called a fable, should give them so much offence? Let us suppose for a moment, that the Christian is mistaken in his opinion, and may be disappointed in his hopes. Does it consist with our ideas of kindness and humanity, to correct his error; an error that is inoffensive through life, and comfortable at the hour of death? Is it a benevolent work, to steal their only treasure from the sons of oppression? To add desperation to poverty, and misery to affliction? To root up and destroy a pleasant vine that bears delicious fruit, for the sake of planting a noxious or a barren shrub? Does it consist with the love of virtue, to vilify and traduce the most pure, perfect and sublime system of morality*

* When I speak of the perfection of Christian morals, I refer to the examples and precepts of Christ and his Apostles; but I protest against every objection that may be adduced from the frauds, debaucheries, and cruelties of men who falsely called themselves Christians. There was a time in which a Christian and a good man were nearly synonymous terms. Honours and emoluments were not at-

that ever was published, and to substitute in its place, "the light of nature," that camelion of a law without a penalty; that flexible rule, that fits itself to every prevailing passion. Whatever the motive of such philosophers may be, the natural tendency of their labour is to destroy the foundation of moral obligation, and to remove the fear of God, without which there never was a virtuous nation, nor ever was there a government well supported; without which, it will soon appear, that "virtue is but a name," and oaths are useless trifles. I address myself, on this occasion, to the citizens of a great republic; to men who know that the loss of private virtue in every free nation, has been the in-

tached to the name. The case has been different, ever since the civil magistrate thought fit to invade the functions of his Maker, by rewarding thoughts instead of actions. From the time in which the profession of Christianity became fashionable at courts, that venerable character has been usurped by the most profligate hypocrites. If the time should return, of which a few symptoms have appeared in Europe, when atheism, or the worship of Jupiter and the minor deities, should again be cherished by the fashion of courts, there will be a more perfect agreement than we observe at present, between the profession and the practice of Christianity; and the number of sincere Christians may not be diminished.

fallible presage of its political slavery. The progress of infidelity, or the disbelief of a future state of rewards and punishments, has been followed in every nation, by profligacy of manners; for it is vain and foolish to suppose, that men will regard an oath, who do not count themselves in the presence of an invisible judge.* In this persuasion I shall not deviate; without sufficient cause, and numerous examples, while I take a short view of the most colourable argument, by which some modern historians have attempted to invalidate the Mosaic history of man. That I may the more confidently expect the reader's excuse for this digression, the more detailed historical facts shall be thrown into the form of notes.

The general appearance of the human race, their difference from one another in shape and colour, have been urged as a proof that they are not all descended from the same ancestors.

The appearance of the earth, or its constituent parts, has also been urged as a proof

* The Grecians were so thoroughly corrupted, as Polybius tells us, by the doctrine of Epicurus, that no confidence could be put in their engagements.

of great antiquity, which far exceeds the short duration of six thousand years, as stated by Moses.

The great antiquity of certain nations, who are said to have existed many thousands of years before the creation, as described by Moses, has been alleged in direct opposition to his chronology.

The first of those objections has been considered. The second objection is specious, but not solid, for the clearest marks of antiquity that have been alleged, do not affect the question. The deep and extensive masses of marble, chalk, limestone, and other calcareous bodies, that are to be seen in every part of the globe; the numerous and thick strata of fossil coals, that are found in different parts of the earth, have been stated as a proof of its great duration. Mountains of limestone and marble, immense bodies of chalk and marle, are found in Siberia, Sweden, Germany, Switzerland, France, Spain, England, and every other part of the habitable world. If we suppose, with some of the moderns,* that all calcareous bodies are

* Dr. Hutton, &c.

formed from the shells, bones, or other exuviae of different animals, a countless duration of years would be fully established; for it is believed that nearly one fourth part of the discoverable earth is calcareous. This argument, however, is not conclusive, for there is reason to believe that calcareous earth is an original substance, from which shells and bones are formed; but not vice versa. This kind of earth abounds in marine plants, and in the waters of the ocean, that give sustenance to fish; it is also a constituent part of the food of all terrestrial animals. For these and similar reasons, it may be questioned whether the existing quantity of calcareous earth has ever been increased by the growth of animals.

It has been supposed that fossil coals are formed from vegetables that have been covered in the earth. This hypothesis is urged as a proof of great antiquity. The quantity of coals that has already been discovered is very great. They are found in all countries where fuel is in much request. They lie stratum below stratum, to a depth that has not been ascertained. A stratum was long since found in the Austrian Netherlands,

that was 800 yards below the surface. The strata of coals lie parallel to one another, at the distance of 100 or 200 feet, and they are separated by strata of slate, limestone, gravel, and sundry kinds of earth. Twenty strata have been wrought in the vicinity of Liege. They differ in thickness from two feet to forty. It is admitted that timber has sometimes been found below the surface, converted into coals; but a few instances of petrolated wood, cannot be given as a proof that fossil coals are usually formed of vegetables. The quantity of bitumen that is daily discharged from springs and lakes, affords a sufficient proof, that the earth abounds in that substance; and it is clear that the inflammable part of coals is bitumen. The ashes of all vegetables afford an alkali; but none is found in the ashes of common fossil coals; from which it is clear that they are not vegetable productions.

Another argument in favour of the great duration of the earth, is taken from the abundance of marine productions that are found in every part of the world. Marine shells are found in the Alpine rocks, in the Pyrenees, and in the hills of Barbary. In

the mountains of Tyrole and Calabria; in those of Lybia, China, Persia, Syria, and all the great mountains of America. Numerous bones of the elephant* and rhinoce-

* It may be suspected that the large bones which have at sundry times been dug up in Siberia, were the bones of that family of quadrupeds, of which an entire carcase has lately been found near Yakoutska, and which had formerly been numbered among the inhabitants of North-America. But if the bones of the elephant and rhinoceros have been found in Siberia, as the observers have confidently asserted, it is an incident that cannot be accounted for by any tenable hypothesis, except by recurring to a great and general deluge. But how could it happen that the bones of sundry animals should be found above 2000 miles distant from their native climate? This question is solved by alleging, what is nearly certain, that when "the fountains of the great deep were broken up," the chief lacerations were made in the southern hemisphere, and the waters rushed with a strong current to the northward. In that case they carried with them the carcases of many quadrupeds. Upon the supposition of such a current, it may be objected that the ark would have been swept to the northern regions. This was doubtless the case; but the ark being a lofty vessel, was driven back by a strong northerly wind that had not the same effect upon bodies which hardly appeared above the surface. We are told that "God made a wind to pass over the earth and the waters assuaged." The shattered remains of the great southern continent have chiefly disappeared, leaving only a few small islands, that may also disappear, unless some mighty earthquake should restore the sunken lands.

Although the story of a general deluge is well supported

ros are said to have been found in Siberia, at some depth below the surface. From these circumstances it is clear, that great revolutions have taken place on the surface of the earth; which seem to indicate a vast duration. It is presumed that much of the land upon which the ocean dwells, was formerly subjected to the plow; for it is clear that much of the present dry land has been covered by water. But these phenomena, in their utmost extent, are not unfriendly to the chronology of Moses; they rather lend it their support; for they seem to have been

by history and tradition, some philosophers have questioned where such a quantity of water could be found. And some critics have deemed the story fabulous, because the dove is said to have plucked an olive leaf in a country that is too cold at present for the production of olives. The first difficulty is removed by observing, that the flood was a miraculous event. It could not have rained forty days and forty nights over the whole earth, unless the water had been created in the atmosphere. The water thus produced, to say nothing of that which rushed from the bowels of the earth, was equal to all the effects described. It will not be questioned that olive trees may have grown, not on a mountain, but a plain, in the latitude of mount Ararat, 38 degrees; when it is considered that Asia, before the flood, was in a state of high cultivation, and that the northern regions, in all probability, were less elevated, and therefore less cold than at present.

caused by that very deluge which is mentioned by the sacred historian.

The great antiquity of certain nations who are said to have existed many thousand years before the creation, as described by Moses, has been urged in direct contradiction to the Mosaic history. This objection, specious as it may be, and fitted to the taste of men who are delighted with romantic stories, cannot endure the test of serious examination.

Passing over the Americans, who have the appearance of being lately planted, we find no trace of antiquity upon the other continent. In that original habitation of men we trace them, in a few centuries, to a state of infancy and ignorance. We discover marks of novelty in every art or science that is the fruit of experience. The arts that are ornamental or useful in life; those by which knowledge is acquired, extended or preserved; every thing valuable among men is modern, when compared with the globe they inhabit.* Our ancestors in

* When I speak of the short duration of the human race, compared with the obvious antiquity of the globe, I must be understood to refer to the posterity of Noah, the parent of the present race.

Europe were painted savages eighteen hundred years ago, like the present race of American Indians. The Romans at that period regarded other nations as barbarians; but looking back seven hundred years farther, we find the Romans a set of savage, unlettered robbers. The Grecians were the first people in Europe who distinguished themselves by arts and literature; but the Grecians had attained their utmost perfection in knowledge about six hundred years before the Christian era, although they had been perfect barbarians a few centuries before that epoch. In the days of Homer they had not discovered the use of iron. Their philosophy began with the fables of Æsop; and those fables seem to have travelled from India. The Grecians were indebted to the Egyptians for a considerable part of their learning; but four thousand years have not passed since the Egyptian monarchy was founded. The Egyptians borrowed the greater part of their knowledge from the Hindoos, or their ancestors, the Chaldeans. Our heathen ancestors, the Goths, Vandals,*

* The Scandinavians worshipped Woden, Frea, and Thor; but Woden was Budha of India, Fo of China, Taut

and the more polished Romans and Grecians,

of Phenicia, and Mercury of Greece. The Hindoos had their Brahma, Veeshnu, and Seeva; the creating, preserving, and destroying deities. The Persians had their Oromasdes, Mithras and Ahrimanes, Creator, Preserver and evil spirit. The Egyptians had their Osiris, Cneph and Ptha, sun, spirit and flame. Osiris and Isis of the Egyptians begat Horus, light. Horus, with his numerous darts, slew the serpent. This was Hydra of the Greeks, who was slain by Hercules. Sheshenaga of the Hindoos was the king of serpents. Janus, a god of the Romans, was the beginning and founder of all things; and Genesa of the Hindoos is invoked at the beginning of every enterprize. Janus, who saw behind and before, was no other divinity than Noah, who saw both worlds. Jupiter, of the Romans, was attended by an eagle, and by Ganimede, a beautiful boy. Veeshnu, of the Hindoos, is described in his temples, riding upon an eagle, and attended by a little page. Juno is attended by a peacock; and Parvati, the wife of Seeva, of India, is attended by her son, who rides upon a peacock. All those whimsical deities must have sprung from the same root. Zenoras, speaking of the religion of the Greeks, says, "All things came from Chaldea to Egypt, and from thence were derived to the Greeks." In this remarkable agreement among so many nations, of different language and colour, about those arbitrary and fictitious objects of worship, we discover a powerful argument in favour of the general deluge. "All flesh had corrupted his way." The sons of Noah were acquainted with the idolatry of the old world, and in a few generations, their posterity, the children of Shem not excepted, had almost universally become idolators. As they had all sprung within three or four generations from the same stock, they all returned to the same abominable idolatry, to the idols of the antediluvian world.

borrowed their fabulous divinity, their objects of worship, and manner of dividing time, from the Hindoos. But the Hindoos may also be traced to a state of infancy.*

* Cayumenes ascended the throne of Persia about eight hundred years before the Christian era, and the Mahabadian dynasty had existed in Persia long before the reign of Cayumenes. We are taught by learned Persians, that Mahabad the first monarch of that dynasty, left a book of regulations, by which he divided the people into four classes, the religious, military, commercial, and servile. This book he pretended to have received from the Creator of the world. The religion of Mahabad took its rise in Persia before the conquest of Rama, or the settlement of the Brahmans in India. That unnatural division of men into four classes prevails in India to this day. The Egyptians, as Diodorus Sieulus tells us, were formerly divided into four classes. It is not improbable that a similar division of men into classes prevailed in the world before the flood; or rather that particular trades were exercised in particular families, and in them only. We are told that all musicians were descended from Jubal, and all workers in metal from Tubal-Cain, another of Lamech's sons, who was the fifth in descent from Cain. I presume that Mahabad was the common name of Cush, the son of Ham: for it will hardly be questioned, that Rama, the son of Cush, was the founder of the different classes of men in India.

In the primitive language of the Hindoos we find another proof of their Persian origin. The Vedas, their sacred books, are written in Sanscrit, a dead language. But there was a language called Zend, of Caldaic origin, in use about twelve hundred years ago by priests and philosophers in the Persian empire. It was at that time a dead

They migrated from Persia, the cradle of the human race. This humble and degraded nation, so little celebrated in history, so little practised in the art of destroying one another, were long since splendid in arts, happy in government, wise in legislation and eminent in knowledge. Coming from a colder climate, they brought with them a stock of knowledge, which they improved in a happy soil.

This short and general view of the human race, perfectly agrees with the history of the Jewish legislator. It implies a similar duration of the family. Though this chronology has been assailed by critics and philosophers, who, trusting in the credulity*

language. By comparing those two languages together, it appears, that seven words in ten of the Zend are also found in the Sanscrit. Sir William Jones.

Hence it follows, that the Chaldaic and Sanscrit sprang from the same root, and those nations from the same ancestors. The Sanscrit language is said, by Sir William Jones, to be of wonderful construction, perfect, copious, and exquisitely refined. I suspect that it includes the only remains of the antediluvian language. I suspect also, that the Hindoos were indebted to the antediluvians for their astronomical knowledge, as well as for their system of mythology, and their abstinence from flesh.

* The author of a book, lately circulated with great industry, (Ruins of Palmira) must have confided very much

of their readers, have ventured to assert, without proof, and teach without informa-

in the credulity and ignorance of his readers, else he would not have asserted, that the Jews had no idea of the immortality of the soul, before the Babylonian captivity. They borrowed that opinion, as he alleges, from the Persian Magi, during their captivity. He should have presumed, that some of his readers might chance to read the Bible, in which they would discover, that Moses, who wrote above eight hundred years before the captivity, spoke of Enoch, a just man, who walked with God, and was translated. He also spoke of angels, who are usually invisible spirits. Solomon too, when he speaks of death, (and he wrote four hundred years before the captivity,) makes this pointed observation: "Then shall the dust return to the earth as it " was, and the spirit shall return to God who gave it." In another place, he says, "The wicked is driven away in his " wickedness, but the righteous hath hope in his death." David also says, "God will redeem my soul from the power " of the grave." We cannot conceive how it was that a man of talents and learning, for such is Volney, should have committed himself, by groundless assertions, unless we suppose that he was prevented, by early prejudice, from reading the Bible, and had been deceived by some faithless writer, who pretended to have read it.

The pretensions of certain nations to great antiquity, may be refuted in the most satisfactory manner. It may be sufficient to mention the Chinese, Hindoos, and Egyptians.

The Chinese pretend to a regular chronology of princes, that extends far beyond the flood of Noah. They allege that Fo-hi, the head of their race, was the son of a goddess, who, walking on the bank of a river, was encircled by a rainbow; and after twelve years was delivered of

tion, it bears the test of criticism, and acquires strength from opposition.

a son. This son of a rainbow is doubtless a fabulous prince ; and Confucius himself, the great Chinese legislator, candidly admits, that before the third dynasty, i. e. about eleven hundred years before Christ, " for want of evidence" he could give no certain account of his nation.

The Hindoos have, by far, the highest pretences to antiquity. The Vedas, their sacred books, are said to have been received from Brahma himself, about nineteen hundred and sixty millions of years ago. But no reasonable person can read their account of divine and human ages without perceiving that the whole is founded upon some astronomical enigma. The basis of their divine age is 432 ; but this number multiplied by 60, their usual measure of time, makes 25920, the great astronomical year ; or the time in which, by their account, a fixed star performs a complete revolution, moving to the eastward 50 seconds in the year. It is admitted by the Hindoos, that the Vedas were composed or collected by Vayasa, an excellent astronomer. But the daughter of Ganga, a priest, who was distinguished by her piety, is addressed in one of the Vedas. It must have been composed in her life-time ; and there is sufficient proof that Ganga lived at the beginning of the age of clay, about one thousand and seventeen years before the Christian era. We can hardly desire a better proof, that all their pretences to great antiquity are fabulous.

Certain astronomical tables have lately been mentioned, in proof of great antiquity, for they are said to have been constructed before the flood. Two sets of tables, for calculating eclipses, have been imported from India. One from Tarvalore, on the Coromandel coast, the other from Chrishnabouran, in the Carnatic.

The pretences of the oldest, and most respectable nations, to great antiquity, cannot

The epoch of the Chrishnabouran tables goes back to the 10th of March, 1491, of our era, when the sun and moon entered the moveable zodiac. The epoch of the Tarvalore tables goes back to the 18th of February, 3102 years before our era, or 753 years before the flood of Noah. Are the Tarvalore tables calculated from observations made at the time? May they not have been calculated from observations or tables of a later epoch? The fixed stars have an apparent motion to the eastward, so that their distance increases every year, from the sun's place in the equinox. Their annual motion at present is about $50'' 20'''$; it was less formerly. The obliquity of the ecliptic submits also to changes. It is now decreasing. The moon's motion is accelerated and retarded in turns. As the obliquity of the ecliptic, and length of the tropical year, have been decreasing, and the moon's motion increasing, near 5000 years, we can easily discover, how the Tarvalore tables may have gone back, to a fictitious epoch, six or eight centuries before the flood, without any material errors; but considerable errors must have appeared, if they had gone back fifteen hundred years farther, unless their theory and instruments had been very correct; because they would have reached a period in which the length of the tropical year and the obliquity of the ecliptic should have been increasing, and the moon's motion decreasing. Whatever the time may have been, in which those observations were made, the tables bear internal evidence that one set of them is fictitious. The Chrishnabouran tables make the moon's motion less than the Tarvalore tables; but the moon's motion has been increasing near five thousand years; hence it follows that tables made from the oldest observations should make the moon's motion less than tables from observations

have any weight, in an argument of serious import; for those pretences, when examin-

made at a subsequent epoch. Therefore the Chrishna-bouran tables are older than those of Tarvalore, or made from prior observations, though they do not pretend to equal antiquity. No evidence can arise from such tables inconsistent with the Mosaic history. It is known that a good mathematician, possessed of a correct theory, may construct tables from fictitious observations for any epoch he thinks fit.

The Egyptians set up great claims to antiquity ; but those claims do not bear the test of examination. We are told by Philo of Biblos, that Taut, removing from Phenicia, established an empire in upper Egypt, where he instructed the people in astronomy, music, and letters. He was sur-named Hermes, and was succeeded, at the interval of four hundred years by another person of the same name, who seems to have been contemporary with Abraham. Thales of Myletus, who lived about six hundred years before the Christian era, began his astronomical studies in Phenicia, whence he travelled into Egypt. Pythagoras, a scholar of Thales, studied in Egypt, where he fell into the hands of Chombyses, and was carried a prisoner to Babylon, five hundred and twenty-five years before the Christian era. In Babylon he studied under Zoroaster, the great reformer of the Persian Magi. From Babylon he visited the Brahmans in India, where he improved in the knowledge of astronomy. By the Brahmans he was taught the immortality of the soul and the doctrine of transmigration. Viasa, who lived in India before the age of Pythagoras, taught the immortality of the soul, as appears by the Gecta. (Sir William Jones) Although many of the Gre-cian philosophers travelled to Egypt, in quest of know-ledge, they knew that the Egyptians had imported their

ed with attention, are found in every case, to be false and fabulous. They vanish into

astronomy from Babylon. "Durat adhuc ibi Jovis Beli "templum. Inventor hic fuit sideralis scientiæ." Plin. hist. nat. "The temple of Belus remains there (in Babylon) to this hour. He was the inventor of astronomy." Pythagoras was instructed by the Brahmins in the true motions of the heavenly bodies, now called the Copernican system; but the Grecians disbelieved, or soon forgot, a theory that was not supported by the senses. There is not any record from which it can be inferred that learning is of great antiquity among the Egyptians. But those people inhabited a valley, that was fertile beyond example, wherefore, in a short time, they became wealthy and vain. The pride of a Grecian, who scorned to trace his origin from a barbarous nation, induced him to allege, that he was Antochthonus, sprung from the soil on which he lived. The Egyptians, by a fictitious chronology, wished to be regarded as the first of nations. We have not any ancient history written by an Egyptian, but we have lately been told, that the calendar is engraved upon certain pillars, or upon the walls of a temple in upper Egypt; by which it would appear that the sun was in the constellation Aquarius in the middle of June. This would imply a duration of twelve or thirteen thousand years. In the temple of Tentyra, in upper Egypt, there is a delineation of the zodiac, by which the sun appears in Cancer. If the artist, by this position, intended to signify, that the sun was in Cancer, at the vernal equinox, he made the temple older by many thousands of years. Are those monuments to be regarded as correct records; or should they be viewed as the fictitious effects of vanity? They are doubtless to be considered in the latter point of view.

1. Because the whole current of ancient history forbids

air, leaving nothing upon which the mind can rest. The general tenor of profane

us to believe that Egypt was peopled at the time to which these monuments refer.

2. Of all the kingdoms under the sun, Egypt is the last that may have been inhabited, twelve or eighteen thousand years ago. If that valley had been drained at the time referred to, the mud from Abyssinia, and the sand from the desert, must have raised the surface above the copious watering of the Nile; or they would have raised the Nile far above the level of the ocean.

3. In the oldest history that exists, we have a satisfactory proof, that the monuments in question are fictitious. I mean the history of the Jews. I shall be permitted to speak of Moses, as we speak of other historians. He was a man of talents and erudition. He had been educated in Egypt, probably at court. He asserts, that the world had not existed more than three thousand years. As he claimed to have been divinely inspired, it is not to be supposed that he would have put it in the power of the Jews or Egyptians to disprove his assertions, or refute his chronology. He was acquainted with the Egyptian history, and he knew what pretences they had to antiquity. If the supposed duration of the world had then been greater than he stated it, he might have fitted his chronology to the prevailing opinion. Prudence would have taught him to adopt that measure. Is it to be supposed that a wise legislator, a respectable historian, and a prudent man, would have endangered his reputation, by asserting that the human race had not existed more than three thousand years, when he knew that he could be refuted by a prevailing opinion, and by public monuments, which stated a duration of twelve or eighteen thousand years? We are bound to admit, that no such opinions, and no such monuments, existed in Egypt

history, is rather to be considered as a presumptive argument in favour of the chro-

at the time when Moses wrote his history. The Egyptians did not understand the true motions of the heavenly bodies, or length of the year, for many ages after the Israelites had escaped from Egypt. This appears from Herodotus, who claims our attention. Herodotus was informed, by the Egyptian priests, as we find in the second book of his history, that when Sethos, one of their kings, died, there had been three hundred and forty-one kings in Egypt, from Menes, their first king (of mortal race), the reign of three kings being equal to one hundred years. The entire duration of their empire being 11366 years. They added, that during that period the sun had deviated from his usual course, having twice risen where he used to set, and twice gone down where he used to rise. This, however, had produced no alteration in the climate of Egypt. The fruits of the earth, and the phenomena of the Nile, had always been the same; nor had any extraordinary or fatal diseases occurred. As the sun has never risen in the west, the priests must have meant, that in the space of 11366 years the sun had twice risen in the constellation that was west, or opposite to the sun's rising when their empire was founded; an event that could not have happened in less than 37000 years. Such is the time, in round numbers, that is required for the vernal equinox to perform a complete revolution, and a half revolution, through the twelve constellations. The equinoctial points advance a little more than two seconds in the year, therefore, though the sun was in the beginning of Aries, at the vernal equinox, about 2000 years ago, he is now in the beginning of Taurus at that season of the year, and in a little more than 25000 years the vernal equinox will be found in all the constellations. This is called the *annus*

nology of Moses; for there is not a nation under the sun whose history or chronology

magnus, the great year. The Egyptians had not any knowledge of the great year; for Herodotus was informed by those very priests, that "they (the Egyptians) first defined the length of the year, dividing it into twelve signs, "in which they were guided by the stars. They gave "thirty days to each month, and added five days to every "year." By that addition, as they conceived, the circle of the seasons returned to the same point. This mistake of the Egyptians, respecting the length of the year, produced all the phenomena described by the priests. The Egyptian year was too short by five hours forty-eight minutes and fifty-seven seconds; but 5h. 48' 57" multiplied by 1506, gives 365 days within two hours: hence it follows that every year being too short, the following year began too soon, and in the course of 1506 years the beginning of the year retreated through all the signs in the zodiac. In other words, the chief harvest, and the overflowing of the Nile, were found in every month of the year, in the space of 1506 years: from which the priests, not suspecting the truth of their calculations, concluded that the sun had changed his place of rising. According to their account, the sun appeared to travel through six constellations in 753 years; in which case he was said to have risen in the west. In 1506 years more he changed the seasons through all the months of the year, and was again supposed to rise in the west. Thus the sun rose twice in the west in the space of 2259 years; that is to say, between the accession of the first Egyptian king and the death of Sethon. From this it appears that the Egyptians extended their monarchy as far back as they had any knowledge of the human race, viz. to the flood, or the birth of Noah. Let it be recollectcd, that Herodotus was in Egypt about 480 years

goes back, with any colour of probability, to the time in which the human race, ac-

before the Christian era, and that Sethon died about 280 years before that period, viz. about the time in which Hezekiah reigned in Jerusalem; but Hezekiah, according to the Septuagint and Samaritan copy of the Bible, reigned about 2269 years after the flood. From this it would appear that the Egyptians extended their monarchy to the flood. This extension was not very unreasonable, when we consider that Mizraim, the grand-son of Noah, is supposed to have settled in Egypt, where he began his reign, not more than 120 years after the flood. If we take the chronology of the common Hebrew copy of the Bible, instead of the Septuagint, we shall find that the Egyptians extended their monarchy to the birth of Noah, 600 years before the flood.

It has been alleged, by all nations of great antiquity, that the earth was formerly destroyed by a flood, and that their ancestors were men of superior bodily strength, who lived to a great age. These concurrent opinions, founded upon tradition, have never been well accounted for, except by reference to the facts stated by Moses: The Chaldeans, Egyptians, Syrians, and Phenicians, were nearly agreed in their traditions concerning a general deluge. Plato, in his Timeo, speaks of a general deluge, recorded in the sacred books of the Egyptians, that happened long before the Grecian inundations. Lucian, *de dea Syria*, describes Deucalion as the father of a second race of men, who was saved for his piety, in a ship, with all manner of beasts. Berossus, a priest of Belus, who wrote of the astronomy and philosophy of the Chaldeans, related the history of a flood nearly in the words of Moses. Plutarch, *de solertia animalium*, speaking of Deucalion's flood, mentions the dove that flew from the ship, in which Deu-

cording to Moses, had its beginning. Every thing that has been written concerning prin-

calion was saved, and returned again. Fo-hi, the progenitor of the Chinese, is believed by those people, to have trained up seven kinds of beasts, some of which he offered in sacrifice every year to the Creator of heaven and earth. This was doubtless Noah, who took with him, into the ark, seven of all clean beasts. The general deluge is described, in the eighth book of the Bhagawata, a sacred record of the Hindoos, nearly as follows. At the close of the sixth Monwantara, the demon Hayagriva having purloined the Vedas, the whole race of men became corrupt, except seven Richis and Satayavrata, who then reigned in Dravina, a maritime country. This prince was performing his ablutions, when Veeshnu appeared to him in the form of a small fish. This fish, after sundry augmentations, was placed by him in the ocean, from which it addressed him thus: "All flesh have offended me, and shall be destroyed; but thou shalt be saved in a capacious vessel. Take, therefore, all kinds of esculent grain for food, and enter the vessel, with the seven Richis and your wives, and a pair of all animals." It disappeared, and after seven days the ocean began to overflow the coast, and the earth to be flooded with showers, when Satayavrata saw a vessel moving towards him. He entered the vessel, and was saved. It can hardly be alleged that Moses borrowed an account of the deluge from the Hindoos, or they from him.

The general belief that formerly prevailed in the world concerning the great age and strength of our ancestors, is also in perfect agreement with the Mosaic history. We are informed, or it follows as a necessary consequence, from what we are told by Moses, that there was not any rain before the flood. He says, "The Lord God had not

ces or dynasties of princes, of an earlier date, is clearly marked by fiction. The stories,

" caused it to rain upon the earth. But there went up a mist from the earth, and watered the whole face of the ground." Moses tells us indeed, in the same place, that "there was not a man to till the ground." But we readily discover that chronological order is not observed in the statement of those facts. The earth was created on the third day, and Adam on the sixth. In a narrative so compressed as to make six short chapters contain the history of sixteen hundred years, the historian could not have stooped so far as to inform his readers that the earth had subsisted, or vegetation was continued two or three days without rain. He certainly intended to inform us that there was a remarkable epoch, in which the fruits of the earth were nourished by the mist or dew, as now they are by rain. Had there been any rain before the deluge, there must have been a rainbow; but there was none. Hence it followed, that a rainbow, after the flood, was a new phenomenon. The earth was watered before the deluge, as some parts of the Peruvian empire are at present. The face of the earth was nearly level, without mountains, marshes, or sandy deserts, by which the temperature of the air might be altered. If there had been mountains, there must have been rain and sudden changes of the atmosphere. There could have been few of those diseases, by which the human race are now consumed, upon a globe without mountain or large hill, without rain, storm, or sudden changes of the weather. In a few centuries after the flood, the constitution of man was broken down to the present standard, by a sickening climate; Joseph, who was the eleventh from Shem, lived only one hundred and ten years. In opposition to this theory it may be alleged, that Moses says, "The mountains were covered." He

as they are related, could not possibly be true. Neither is there a single monument that has been mentioned on the face of the earth, pretending to great antiquity, which does not bear indisputable marks of forgery and falsehood. The oldest profane history that has reached our time, fanciful as the chronology, or part of it may appear, and swollen by Egyptian pride, when carefully examined, is found to coincide with the Jewish history.

In the silence of history, we naturally direct our attention to the documents of oral tradition; but there is not a single tradition, that has reached our ears, among the nations who inhabit this earth, barbarous or civil,

also says, that "the ark rested upon the mountains of "Ararat." The historian could have intended nothing more by such expressions than to assure the readers, that every part of the globe, the highest mountains they had seen, were covered by water. There was a mountain called Ararat, when Moses wrote; but it does not appear that such a name, or such a mountain, existed before the flood. When this very writer speaks of a war that four kings waged against five, in the days of Abraham, he says, "They smote all the country of the Amalakites," meaning the country that is now so called; but Amalak was born, and his name was given to that country after the death of Abraham.

from which it can reasonably be inferred that the present race of men are of great antiquity. On the contrary, the Mosaic history perfectly accords with the traditions of the most ancient and respectable nations. Time and observation, which destroy other systems, and subvert other opinions, are giving additional strength to the chronology of Moses, and the evidence of sacred history.

Upon a general view of the subject, we have not discovered a single argument, founded on the colour or shape of the human race, on the texture of this globe, or upon the histories or traditions of ancient nations, by which we can be authorized to reject the Mosaic history of man. Every argument, on the contrary, and every appearance, is in favour of that history.

Whatever the time may have been, in which the human race had its beginning; and however the several families may differ, at present, from one another, in shape and colour, our interest is the same in the original question—Do the human race degenerate in America? To this question we reply, without hesitation, in the negative; since it is clear that the arguments, founded upon

the supposed causes or instances of degeneracy, are not supported by observation.

It is granted, that upon the old continent the inhabitants of one climate and country, in many cases, are greatly superior to the inhabitants of another climate and country, in mental and bodily powers; but we have not discovered any foundation, in nature, for supposing that Americans, in general, should be inferior to the inhabitants of the old continent.

If a distinction may be looked for, in the process of time, between the American and the native of the old continent; if the inhabitants of either continent are to excel those of the other in strength of body or of mind; if there is any part of the globe in which the human species may be expected to arrive at the greatest perfection, I cherish the pleasing hope, that the favoured place will be found in America.

After I had complained, that historians in Europe seem to be influenced by an illiberal spirit, or by partiality to their native soil, when they speak of America, I have not risked a sentiment that is nearly contrasted with theirs, without a considerable degree

of hesitation. It may possibly be suspected that my wishes alone have given birth to this opinion; but the reader shall determine after he has considered the following observations and facts.

It has been remarked by historians and philosophers of the greatest celebrity,* that the distinguishing character of nations is formed, in a great measure, by climate, situation, and food. Are they weak or strong in body; are they indolent or active, cowardly or brave, mild in disposition or fierce, of a quick perception or dull? The difference, in general, is to be explained by the difference of the climates in which they live; by the form and face of the country they inhabit, or the food by which they are nourished. In warm climates, the inhabitants, in general, have a quick perception and lively imagination; but they are fickle and indolent, weak in body, and timid. They are averse from all hazardous attempts, or military operations; because they are deficient in strength, courage, and activity: hence it follows, that in general they become the

* Hypocrates, Tacitus, Galen, Cæsar, Montesquieu, &c.

subjects of political slavery. In Turkey, Persia, China, Japan, India, and Africa, we find examples, without number, in support of this position. In cold climates the inhabitants have less sensibility or genius, but they have more activity and more strength of body: wherefore they have more courage and more steadiness in pursuit of an object; they are also more tenacious of their liberties.* The Germans who migrated to the southward, during the convulsions of the Roman empire, were strong, brave, and free; but in a few generations their strength and courage failed, in a warm climate, and they surrendered their liberties. In temperate climates we look for a favourable combination of those qualities which predominate in the extremes. There we find courage and strength, the associates of enterprize, activity of mind, clear perception, and sound judgment, without the levity and sickleness of warm climates. In temperate climates the liberal arts may be expected to flourish;

* The Tartars in the north of Asia are the only free people in that great division of the world, the Arabs perhaps excepted, who are, in general, wretchedly poor.

and there we look for a spirit of inquiry, the parent of political freedom. Such are the most obvious and general effects of climate; but those effects are modified by situation and food. The activity and powers of the mind are greatly affected by the state of the atmosphere. Clear perceptions and correct reasonings are promoted by a dry and clear atmosphere; but a thick atmosphere, highly charged with vegetable exhalations, naturally produces languor and dullness of perception. The stupidity of the Beotians, who lived in a thick atmosphere, was proverbial among the Greeks; people also who lived on marshy ground, near the river Phasis, were generally dull, as we are told by Herodotus. To say that a man was, “*crasso in ære natus,*” born in a thick atmosphere, seems to have been a civil method, among the ancient Romans, of calling him a block-head. From the necessary effects of a damp, thick, and warm atmosphere, it follows, that men who live on a dead plain have less activity, less strength, less enterprize, and less sagacity, than men who inhabit a broken, mountainous country, in the same degree of

latitude.* On hilly grounds the atmosphere is more light, cool, and pure. In those situations men exert themselves with alacrity and perseverance. The characters of men, who live in similar climates and situations, are also affected by the quality of their food. Animal food is observed to promote strength of body, activity, and courage, verging on ferocity;† but it is not favourable to study or

* This distinction, so far as it respects the body, takes place among quadrupeds. It is observed, that horses who are bred on hilly grounds, have more strength, activity, and perseverance than those who are bred upon plains.

† The unlettered savage, who supports himself by animal food, is fierce and barbarous in every case; but men who are equally untaught, being supported by vegetable food, are commonly of a mild disposition. The savage of North-America, who supports himself chiefly by animal food, is proverbially fierce and cruel. The Tartars, who are little attached to agriculture, have ever been distinguished by their ferocity. The islanders also, in the South Sea, who live chiefly upon fish or flesh, are observed to be ferocious; but the islanders who are chiefly supported by vegetables, as in the Society Islands, are infinitely more gentle in their disposition. The Hindoos, who, from religious motives, have abstained from animal food, time out of mind, are, of all the human race, the most gentle and timid; but the military class of that nation, notwithstanding the common precepts of religion, have been constrained to eat flesh, that they might acquire strength and cou-

the powers of the mind. Vegetable food is not favourable to personal strength, but it promotes sensibility, a mild temper, and clear perceptions. It is probable, that a greater proportion of animal food is consumed, at present, by the Americans, than is, or can be obtained, by the civilized inhabitants of the other continent: but this distinction will not prevail when America, like the greater part of the other continent, shall be fully peopled. From a circumstance of this kind, which is contingent and mutable, we cannot form any reasonable conjectures respecting the future character of the Americans.

The temperature of the climate, the face or form of the country, and the quality of the atmosphere, are the great and permanent causes, by which the character of the American nations is to be formed. We have seen that men of genius and erudition are not to be expected in climates that are very warm or very cold. Instances there have been, of

rage. The Arabians have long been distinguished by a malicious and revengeful temper; a temper that is thought to be produced by the camel's flesh on which they feed; for that animal is remarkably malicious, and tenacious of anger.

fine talents, in climates of both descriptions, but they were few.

“Apparent rari nantes in gungite vasto.”

Neither do we look for genius and talents in a moderate climate, provided the inhabitants are pressed by a thick atmosphere, or live upon an extensive plain. The proper nursery of genius, learning, industry and the liberal arts, is a temperate climate, in a country that is diversified by hills, enjoying a clear atmosphere. The reader will be pleased to consider, whether there is any part of the old continent, in which these circumstances occur, in so extensive a degree, as they do in America, at least in North-America. The Africans in general are lethargised by constant heat, and they breathe in a very impure atmosphere. The most numerous nations in Asia, are chiefly in the same predicament. We discover at once, by the flourishing state of tropical fruits, and various delicate and tender plants, between the parallels of 25 and 40 degrees, in Asia and in Europe, that the heat in those regions is more intense and of longer continuance than it is in North-America, between the same parallels of latitude.

From the position of the lands, as they respect the ocean, and from the bearings and size of the mountains, it must follow, that a similar difference will ever prevail. After we have passed the forty-fifth degree of latitude, travelling to the northward, the distance is not great, especially in Asia, before we arrive at a climate, in which genius is chilled by the severity of winter's cold.

The state of the atmosphere, in America, has seldom been compared with that upon the other continent, so as to determine on which of the continents it is generally most pure. The weight of the atmosphere in different places has been measured by the barometer, but the relative clearness in different countries is not so easily discovered. If memory is to be trusted, I would infer, that the difference is in favour of America. That fine blue sky, which we observe, night after night, in the United States, adorned with countless stars, is seldom equalled, in those parts of Europe which are most frequented by travellers. Whatever the case may be at present, it is certain, that in the progress of settlement, when the face of the country is cleared, the American atmosphere

will become more pure, for it will be less charged with vegetable exhalations. That pure state of the atmosphere must have a considerable effect upon the temper and genius of the inhabitants.

Whatever the benefits may be, that arise from a clear atmosphere, the Americans will enjoy the benefits, in a high degree, that arise from a country diversified by hills and mountains. Our continent is divided, from one extremity to the other, by a vast ridge of mountains, the greatest in the world. North-America is subdivided, by other great and long ridges, that run nearly parallel to the Atlantic, and are habitable, in many places, to the very summit. By such mountains the state of the atmosphere is improved; to them we shall be indebted, in the warm seasons of the year, for refreshing breezes. Mountains of this kind are favourable to health, strength, activity and enterprize. They are also friendly to study and mental acquirements, and they are among the best guardians of our liberty.

The inhabitants of regions, that are extremely cold, are not very numerous on the other continent; nor will they ever be nume-

rous in America; for such countries neither produce food nor fuel in abundance. But it is probable that the small and scattered tribes, who may be congealed in the hyperborean regions of America, will continue to be equally stupid and savage, with their brethren in the northern extremities of Europe and Asia.

If it shall be admitted that extreme heat produces debility and languor of body and mind; that it is unfavourable to study, or any kind of diligent application; it follows that America has much to expect, in preference to the other continent; because there is hardly any part of America in which extreme heat does, or ever will prevail. If genius, industry, erudition, and the liberal arts are begotten and nourished in a temperate climate and a pure atmosphere, America has much to expect; for the climate will ever be temperate and the atmosphere pure, through the greater part of the continent.

While we are marking the circumstances of soil and climate that seem to be favourable to genius and learning, it may be expected that we should also consider the na-

tural effects of another blessing, which in all ages is known to have been the parent and nurse of learning—a high degree of civil liberty; for such the Americans enjoy who are citizens of the United States. If I could speak of our liberties as we speak of the climate and face of the country; if I could speak of their duration as we speak of things that are permanent in nature, I should venture with confidence to predict, that in the scale of science, the American states, in a few ages, would not shrink from a comparison with the Grecian republics, or any other people recorded in history. Not that our liberties can be endangered, situated as we are, by external force. We know in what manner the Belgians and Helvetians, who were but a handful, defended themselves, when they contended for liberty, against a powerful enemy that lay upon their skirts. But we also recollect, for we have seen, in what manner those very people and others, alike free, have sacrificed their liberties. Faction reared her baneful head among them. A spirit of bitterness and detraction, jealousy and revenge, pervaded the nation. One or the other party, inflamed by seditious lead-

ers, were induced to hate their fellow citizens with a deadly hatred. For the sake of destroying their political antagonists, they aided or encouraged a foreign enemy, by whom the whole nation was subjugated. There is an unfortunate similarity, among the vices of the human race, in every part of the world.

The Americans will have one advantage over the inhabitants of the other continent, that does not depend on soil, climate, or the forms of civil government. They will enjoy a more general diffusion of knowledge, unless they degenerate greatly. There are few, very few of the labouring class in the United States, who have not been taught to read and write; nor is it to be apprehended that learning will be neglected in the new settlements that shall be formed; for we know that families are easily supported in such places.

There is, and ever will be, in America, a much greater similarity of form and complexion, among the human race, than is to be found upon the other continent. That similarity may produce a more friendly intercourse, and general communication of

sentiment. The soil of America, which seems to produce animals of equal strength and firmness, but less ferocity of disposition, than are produced on the other continent, may probably give existence to a race of men, less prone to destroy one another, and more desirous to improve the understanding and cultivate social virtues.

NOTES AND EXPLANATIONS.

A

The following register of the winds is extracted from a long detail of meteorological observations made in Pennsylvania, within two miles of the city of Philadelphia. The state of the barometer and thermometer was marked every morning between five and seven o'clock, and in the evening at three o'clock. The course of the wind was marked at the same time. In this extract no account is taken of the wind when it blew from the north or the south; nor is any account taken when it blew from the west and from the east in different parts of the same day. This register indicates the days in which the wind continued westerly or easterly through the day. The original register for the year 1748 was imperfect, for it did not begin with the year: neither was the register complete for the year 1749; but it was complete from the first of October, 1748, to the first of October, 1749, making a whole year, except for nine days after the 24th of November, 1748.

Westerly. Easterly.

1748.	October	19 days	9 days
	November	12	6
	December	20	5
1749.	January	28	3
	February	23	1
	March	18	8
	April	16	7
	May	22	
	June	9	4
	July	17	6
	August	16	12
	September	13	11
		—	—
		213	69 or nearly $3\frac{1}{2}$ to 1.

	Westerly.	Easterly.
1767. January	18 days	11 days
February	22	4
March	15	13
April	15	12
May	15	12
June	20	5
July	19	6
August	21	4
September	18	3
October	19	10
November	18	11
December	25	5
	—	—
	225	101 or nearly $2\frac{1}{2}$ to 1.

	Westerly.	Easterly.
1772. January	12 days	14 days
February	21	6
March	15	12
April	19	7
May	16	8
June	17	11
July	20	4
August	16	10
September	18	9
October	14	10
November	17	8
December	24	6
	—	—
	209	105 less than 2 to 1.

From this register it appears that westerly winds do not prevail as much in the United States at present as they did sixty years ago.

At St. Petersburgh, in Russia, according to the account lately delivered by Dr. Gutherie, to the Royal Society of Edinburgh, the westerly winds, during the winter half year, or the six colder months, are to the easterly winds nearly as two to one. During the summer half year they are nearly as three to two; but their coldest winds, as Dr. Gutherie remarks, are to the southward of west.

Winter half year at St. Petersburgh.

Westerly winds	113 days.
Easterly	68

Summer half year.

Westerly winds	110 days.
Easterly	84

In the city of Utrecht, in the United Netherlands, the winds have been observed to blow as follows:

North	42 days.	South	33 days.
North-west	33	South-east	26
West	77	East	53
South-west	58	North-east	43
—	—	—	—
210		155	

Mr. Copland, a surgeon at Dumfries, in Scotland, observed the direction of the winds for seven years, and found them to be as follows, viz.

Westerly	77
Easterly	66

Dr. Campbell, in Lancaster, England, in the course of seven years found the winds to be in this proportion:

Westerly	216
Easterly	149

The direction of the winds was observed at Dover for three years, and they were,

Westerly	321
Easterly	173

Such is the prevalence of westerly free winds above those which blow from the eastward:

In the city of Edinburgh the winds were observed to blow as follows:

Anno 1797.	West 256 days.	East 109 days.
1798.	West 250	East 115

Trans. R. S. Edinb.

B

In the year 1774 the Governor of Virginia found it necessary to undertake an expedition against the Shawanees and other Indians who had been very troublesome on the frontier. Col. Lewis, the commanding officer, with one thousand five hundred riflemen, encamped, about the first of October, on the south side of the Ohio, on a point of land that is formed by the junction of that river with the Great Kenhawa. In that position he waited for a reinforcement from Pittsburgh. The Indians had been informed of Col. Lewis's march, and they resolved to give him battle before he entered their country. The celebrated chief, who was surnamed Cornstalk, collected eight or nine hundred gun men, or warriors, for this purpose, and marched in quest of the Virginians. Having discovered where they lay, he formed the bold resolution of crossing the Ohio by night, and attacking them in their camp. The river was deep, and it was at least half a mile broad; but he passed his army, without boat or canoe, by the help of rafts made of logs, and approached within a mile of Col. Lewis's camp undiscovered: He chanced to fall in with two hunters from the camp at the dawn of day; one of them he killed, but the other escaped and alarmed his sleeping companions. A party of choice men were im-

mediately detached in quest of the Indians, whom they met in a short time. The onset was furious, but the Virginians were forced to retreat, having lost a considerable number. The whole army was soon brought into action. They formed a line behind the trees, and the Indians did the same. The battle became general before sunrise, and continued with unabating vigour and firmness until it was dark. The Indians, who had suffered greatly in the action, retired under cover of the night, and recrossed the Ohio, taking with them all their wounded and most of their dead. In the course of the action many Indians gave unequivocal proofs of the most daring courage. The conduct of their chief was able and conspicuous. During the day his tremendous voice was heard through the lines, commanding or encouraging his troops.

In the year 1781 a party of Indians committed some depredations near Estille's station, on the south side of Kentucky river, and retreated. Captain Estille, a woodsman of distinguished bravery, raised a party of twenty-three active riflemen, and pursued the Indians. On the following day he came in sight of them as they were fording a river. They were equal to his party in number. One of his men, who was in advance, fired upon the Indians, and two of them, wounded by the same ball, fell into the water. The other Indians, who had crossed, betook themselves to trees; but one of the wounded Indians called upon his companions with a loud voice, upon which they boldly recrossed the river, and offered battle. The action was supported with great firmness on both sides for more than an hour, when the Indians, perceiving that the white men did most execution in firing, charged with their tomahawks. Estille was killed, and the survivors of his party were put to flight. All Estille's men except seven, were killed or wounded, and the Indians, who had suffered more than the white men, were incapable of pursuit.

In the year 1790 Major Willis, a brave and experienced officer of the United States, was detached by General Hamer, at the head of eighty-seven men, regular troops, to the Miami village, where he was to expect the arrival of two detachments of militia. The Major stationed his men on a piece of rising ground, in the midst of a large old field. He was discovered by a party of Indians, who immediately raised the war whoop, and advanced to the attack through the open ground, singing a war song. The action was decided in a short time. The Major was killed by the first fire, and five only of his party escaped.

We could give other proofs without number of active courage, a quality the Indians are known to possess in a high degree, by those who are best acquainted with them.

The Indians were never said to have been deficient in passive courage. There are cases in which they seem to have eclipsed the fortitude of Regulus.

When the French from Canada, and their confederate Indians, invaded the country of the Five Nations, during the minority of the American colonies, an old Sachem of the Oncida Tribe was taken prisoner, for he scorned to fly. The Sachem endured with astonishing fortitude all the tortures to which his enemies exposed him. One of the Indians stabbed him with a knife; to whom he observed, " You had better make me die by fire, that those " *French dogs* may learn how to suffer like men. You In- " dians, their allies, *you dogs of dogs*, think of me when " you are in the like condition." *Charlevoix.*

While the late General John Armstrong was destroying an Indian town, near the Ohio, the warriors betook themselves to a block-house; part of that house was set on fire, and the General called to the Indians to surrender and save their lives. Their chief replied, " You may burn the " house, we can eat fire." Thus they were burned, preferring death to what they counted a reproach.

C

When Harold Harfagre, in the ninth century, made himself master of all Norway, which had formerly been divided into many small kingdoms, the Norwegian nobility, many of them impatient of a superior, fled to Iceland, Shetland, and the Orkneys. Ingulf, a nobleman of some consideration, removed to Iceland in the year 879, with a small colony. That island was sufficiently known, for it had been visited by fishermen, or sea rovers, who, for two or three hundred years, had covered the Northern Ocean. He found a wooden cross on the south shore, and a thick forest of birch trees, but no inhabitants.

In the year 982 Erick, the son of Torwald, whose father had fled from Norway, being himself obliged to flee from Iceland, settled a small colony in Greenland, which had lately been discovered. The name given to this cold region was seductive, and the colony increased considerably, until the year 1348, when a great proportion of the inhabitants were cut off by a pestilential disease. The present savage inhabitants of Greenland have a tradition concerning that colony, and retain a part of their language.

In the year 1001, Biarm, the son of Heriol, a Norwegian Icelander, sailing for Greenland without a pilot, the wind blowing at north for some days, fell in with land to the westward that was flat and covered with trees, on which he did not land, for it did not answer the description of Greenland. After his return to Iceland, having described the flat country he had seen, Leif, the son of Erick, who had discovered Greenland, sailed in quest of the land Biarm had discovered. He soon reached the coast, and running along it some days, he found a river, which he entered. The river abounded in salmon, the air temperate,

and the soil of the country good. Here he discovered native grapes; whence he named the country Vinland. The adventurers erected houses, and spent the winter among the natives, who were small inoffensive men. They had canoes only fit to hold a single person when he went a fishing. Some years after this discovery, Tonsin, a rich Icelander, with his wife, five other women, and sixty sailors, much cattle, provisions, and implements of husbandry, formed a settlement in Vinland. The natives traded with them, bringing furs, sables, and small white skins. Tonsin returned home after three years, with a valuable cargo of furs and raisins. The fame of his riches induced other adventurers to visit the new colony, and the intercourse between that country and Greenland, Iceland, or Norway, seems to have continued for many years.

In the year 1121 Eric, a Bishop of Greenland, visited the colony, probably with little success, and since that time the civilized inhabitants of Greenland being lost, those of Iceland greatly reduced, and the northern nations weakened by pestilence and internal feuds, all remembrance of Vinland has been obliterated. It seems to have been the Labrador coast. *Mallet's Northern Antiquities. Torfei Greenland Antig.*

N. B. The small illiterate inhabitants of Vinland, Greenland, and Iceland, who were discovered there in the ninth or tenth century, had doubtless passed over from the old continent in the same manner that we have seen the Norwegians pass; but the memory of that event is lost by the want of letters.

D

There is much reason to believe that the aborigines have been long in possession of this country, and have been very numerous. We find the remains of military works or fortifications in every part, from the Gulf of Florida to Lake Ontario. Those forts have been strongest and most numerous where the soil was fertile; whence we infer that those people supported themselves chiefly by agriculture. That we may be enabled to form some estimate of the number of the former inhabitants, we shall take a short view of the forts they built upon the northern waters of the Ohio. Muskingum is the first considerable stream that enters the Ohio below the 40th degree of latitude, the next is Scioto, and the third is the Little Miami. There have been numerous and large forts upon the Muskingum. There is a chain of forts upon a western branch of that river, near two miles in length. The waters of the river Scioto have also sustained a crowded population. The town of Chillicothe is about sixty miles from the mouth of that river, and there are at least twenty fortifications within fifteen miles of that town. Some of those forts include one hundred acres of ground. Upon the river Miami the forts are equally numerous. We seldom travel ten miles on the banks of that river, or through that country, in any direction, without seeing a fort, or passing near one. In a word, the whole face of that fertile country is hacked and scarred with ancient fortifications, full as much as Flanders is hacked with modern ones. About nine miles from the mouth of the river there are two forts, on the opposite sides; one of them is very irregular, the other is a perfect square. There is a large fort as we ascend about twelve miles, upon a branch of this river, and another fort ten miles farther up that branch. This fort,

which includes ninety acres of ground, is formed with much labour and considerable art, regard being had to the inequalities of the ground. The walls are from ten to fifteen feet high at present, and they measure thirty-three feet across. As much of the original wall has yielded to the inroads of time, it is presumed that the walls have been twenty feet thick at bottom, ten feet at top, and fifteen feet high. The whole length of the wall, with the batteries and other works, perhaps the citadel, is above six thousand yards. According to the dimensions stated, the works of that fortress contained above 150,000 cubic yards of clay, or so many loads for a horse and cart. Such a fort was not built without instruments of metal. There are forts, upon the same river, more than three times the size of this, but few of them so irregular, because they generally stand upon better ground. As the forts were commonly built upon an elevated plain, near a good spring, or the steep bank of a river, the natives secured a passage to the water by parallel walls, or by numerous batteries. Every fort had its tumulus or burying-ground, and some of those tumuli contain the bones of many thousands, men, women, and children, regularly deposited, but in different states of decay. The tumulus that belongs to a fortress in Chillicothe is composed of alternate strata of black mould and ashes, by which it would appear, that in some cases the natives burned their dead. There are some tumuli upon large plains at a considerable distance from any fort. These tumuli only contain the bones of grown persons, promiscuously heaped, and in a similar state of decay. They seem to mark the carnage of a field of battle.

Some of the great tumuli, in that region, do not contain more than the bones of one person. Those tumuli have been the tombs of sachems or persons of distinction; for in every case the bones are attended by ornaments of brass, implements of war, and images or figures of doubtful im-

port. It may be observed, that the same custom of burning the illustrious dead prevailed among the Scythians, the supposed ancestors of our Indians, above three thousand years ago. The chief was buried, as we are told by Herodotus, with some of his most valuable effects, and over him was raised a vast mound of earth. We are also told, by Pallas and other modern travellers, that the country of the Calmuck and Mongul Tartars, and those great deserts that lie between the Amur and the Irtesh, abound in monumental tumuli. The bones of the dead in some of those tumuli have been accompanied by jewels and ornaments of gold. But the greater number of those tumuli, when opened, have disappointed the avarice of modern plunderers; the Scythian antiquities they contain have little intrinsic value. It is known that tumuli of this kind were found by the Spaniards in Mexico, who robbed them with the same avidity as they robbed the living.

From the number and size of those western forts, we infer that the inhabitants of that region were very numerous, and that they supported themselves by agriculture; for men who support themselves by wild game are never prepared to endure a siege; nor was it ever known that men fortified a particular part of the earth who had no property in the soil.

Although it cannot be questioned that the aborigines in those parts supported themselves by agriculture, we have not the means of determining what instruments of husbandry they used. As our ancestors did not find either horses or black cattle among them, it is not improbable that they had subjugated the buffalo. It may be observed that the outer wall of a fort is, in some cases, surrounded by a ditch; but we never find the remains of a ditch opposite to the gates. From this circumstance it is at least probable that quadrupeds entered the gates. It is not alleged that the aborigines ever had the use of iron, but

they certainly had the use of copper. Those forts are doubtless of great antiquity. Certain utensils of the original inhabitants are found within the forts, four or five feet below the present surface of the ground. Many centuries are required to form such increase of soil from the annual decomposition of vegetables.

What has become of that great and numerous nation by whom those forts were built? We can discover but one solution of this question. They were visited by the demon of discord, and destroyed one another by civil wars, deadly revenge, and unceasing hostilities. From the position and number of the forts it appears that the natives were defending themselves from a social, not a foreign enemy. Every part of the country was defending itself from every other part: even in the broken and barren parts of the country we find small forts. When we turn our eyes to some parts of Europe, and observe the numerous castles that were built during the prevalence of feudal misrule, when every little Baron waged war against his neighbouring Baron, we find the counterpart of Indian forts. The beginnings were nearly alike, but, happily for Europe, the issue was different; the regal power absorbing the baronial claims. When the Indians had nearly destroyed one another, the forts were deserted, and the survivors, few in number, supporting themselves by hunting, lost the arts, and became, what we found them, perfect savages.

That the reader may form some idea of the manner in which the natives defended themselves, I have annexed drawings of three forts that were built upon the waters of the Little Miami. The dark lines show those parts that were made of earth. But the fortress could not be entirely composed of clay. The length of the batteries by which the gates were defended, and their distance from the line of the wall, indicates the need of some additional means of defending the port: that addition was certainly com-

posed of wood. There must have been a line of palisades, extending to the wall, from the flank of the battery. The garrison and inhabitants passed through wickets in the palisades. The line of palisades is marked by dots. A gate, composed of wood, in a direct line with the earthen well, could not have been a safe defence; because the assailants, by advancing a pile of fagots, might have consumed it; but the line of palisades within the walls could not have been approached by fagots and fire. Whenever the gate opened upon a steep bank, a battery within was not required. In some forts there are parallel walls, the use of which is very uncertain.

FORT No. 1.

The walls of this fort enclose above 100 acres of ground.

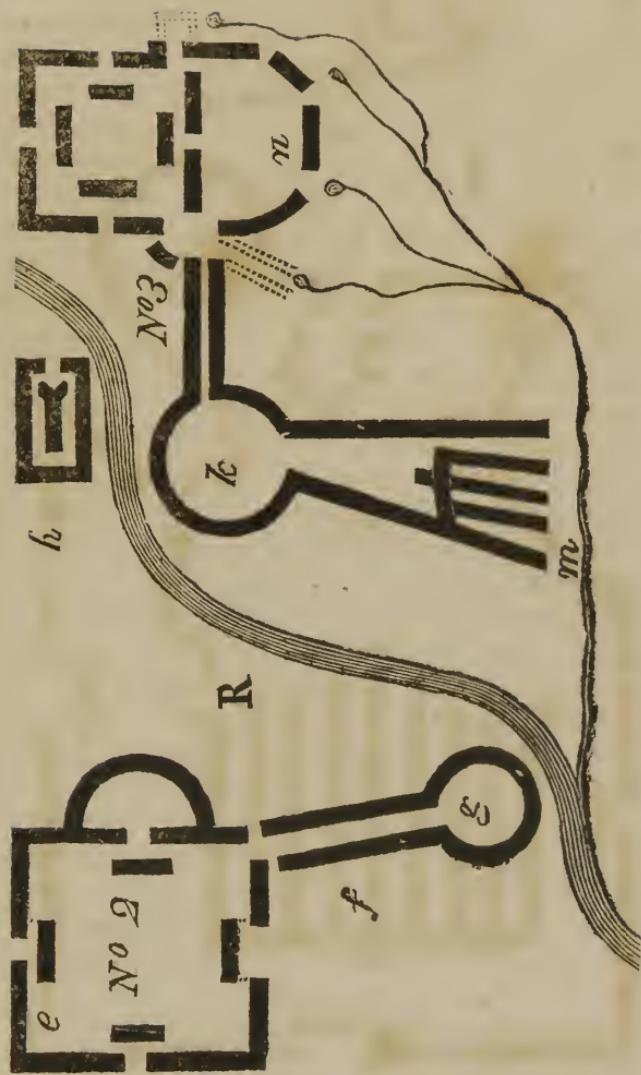
- B A branch of the Miami river.
- a This wall, with the gate, is about 2100 feet long.
- b A valley.
- c A spring and covered way.
- d Low ground.

FORTS No. 2 and 3.

- e This square fort encloses 60 acres, and stands on high ground.
- f The river hill.
- g The river bottom.
- h A redoubt, enclosing about five acres.
- k A round hill.
- m A steep bank, 50 feet high.
- n Between this fort and the several springs there is a steep bank and two covered ways.
- R Little Miami river.







Some writers, as it is known, have advanced an opinion that the ancient walls in the western country were not intended for military defence. We are not surprised at such opinions, for there are few allegations that have not been disputed. A late respectable writer has ventured an opinion, that tides are not caused, as had been alleged, by the influence of the moon, but by the diurnal meltings of ice and snow in the northern regions. In answer to every opinion respecting the use of those walls, I shall only give a short account of an old Indian wall near the river Miami, of which a friend has lately sent me a correct survey. From the situation and construction of that wall it must have been a military fortress, or the builders of it had strange heads. The wall encloses one hundred acres of ground; and its situation is such, that it cannot be approached without great difficulty, except by a neck of level land, about twenty-five chains wide. It has the river Miami on the west, whose bank is steep and high; and it has a small river on the north, and another on the south. The bank of each rivulet is one hundred and twenty-six feet high. These small rivers form a narrow isthmus, a little to the eastward of the fortress. On the west, the north, and the south, where the access was made difficult, by the steep banks of the large and of the smaller rivers, the wall at present seldom measures above eight or nine feet high; but to the eastward, across the level isthmus, the wall now measures nineteen feet and a half in height, and it is seventy-two feet broad at the bottom. There are two tumuli to the eastward, at four hundred yards distance, and an artificial road leading to them. That such a wall was made for military defence can hardly be disputed. The prodigious strength of the eastern wall, when compared with the other walls that were defended by the steep banks of a river, seem to remove every shadow of doubt on this subject.

THE END.

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Observations on the Climate in...America.

Williamson, Hugh.

New-York: T. & J. Swords, 1811.

National Library of Medicine

Bethesda, MD 20894

CONDITION ON RECEIPT:

The quarter paper and blue board binding was stained, dirty, worn, and deteriorated. The spine was cracked, and parts of the paper were missing. The front board was detached. The back joint and internal hinge were broken. The sewing was broken in places. The front flyleaves were detached from the text block. Two plates were bound into the back of the volume. Most of the pages were acidic and discolored. The exterior pages were marked in manuscript ink, graphite pencil, and stamp ink. The red crayon was soluble in water. A book plate was adhered over a notation in manuscript ink on the front pastedown.

TREATMENT PROVIDED:

The pH was recorded before and after treatment: before 4.0, after 8.0. The volume was collated and disbound. The inks were tested for solubility. The head, tail, and pages were dry cleaned where necessary; the pages were washed and then buffered (deacidified) with magnesium bicarbonate solution. Tears were mended and folds guarded where necessary with Japanese kozo paper and wheat starch paste. The bookplate and front pastedown were removed aqueously and incorporated in the new binding. The bookplate was adhered with Lascaux 360 adhesive. The volume was sewn on linen tapes with linen thread. The volume was case bound in handmade paper and titled using a gold stamped leather label.

